Livelihood Strategies and Environmental Management Practices in Northern Thailand National Park Communities

A dissertation presented in partial fulfilment of

the requirements for the degree of

Doctor of Philosophy

in

Natural Resource Management

at

Massey University, Palmerston North, New Zealand

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2016

Abstract

In Northern Thailand, the establishment of national parks is at the forefront of efforts to achieve biodiversity conservation and environmental management while providing socio-economic benefits to society. However, national parks regulations and development interventions have created both opportunities and constraints for the Indigenous hill tribe communities living within the national parks. These communities have, out of necessity, adapted and developed their livelihood strategies and environmental management practices to maintain their socio-economic welfare and ecological sustainability.

This study employed Participatory Rural Appraisal (PRA) as a mixed qualitative research strategy to investigate the livelihood strategies and environmental management practices in Doi Suthep-Pui, Doi Inthanon, and Ob Luang National Parks in Northern Thailand. The main research methods used were interviews, observation, and document analysis to support data that gained from the PRA methods. The aim of this study is to gain insight into the livelihood strategies and environmental management practices of six Indigenous hill tribe communities living in the parks. Interviews were conducted with villagers, national park officials, academics, and representatives from non-government organisations and tourism agencies. The interview data was also analysed to investigate how co-management initiatives and livelihood development projects by national parks officials and external organisations influence Indigenous communities' livelihood strategies.

It was found that the livelihood strategies of the Indigenous hill tribe communities encompass a diverse combination of activities related to their social and ecological relationships in order to ensure sustained socio-economic well-being. Communities engage in sustainable agricultural practices, community-based natural resource management activities and community-based ecotourism enterprises as their significant livelihood strategies. However, while there has been some consultation, co-management, and collaborative policy-making between government and local communities, further improvement of transparency, consistency and accountability is needed. It is argued that greater community empowerment and participation in natural resource management decisions is crucial to enhance both sustainable livelihoods and environmental conservation efforts within Northern Thailand's national parks.

Statement of Originality

I declare that:

- This is an original thesis and is entirely my own work.
- Where I have made use of the ideas of other writers, I have acknowledged the source in every instance.
- Where I have used diagrams or photographs by other people I have acknowledged the source in every instance.
- This thesis will not be submitted as assessed work in any other academic course.

Aurathai Phongchiewboon

26 February 2016

Acknowledgements

My journey to complete this thesis has been both exciting and challenging. I am most grateful for the academic guidance from my chief supervisor Dr Trisia Farrelly, and co-supervisors Associate Professor John Holland and Dr Karen Hytten. I am so appreciative of their kindness, understanding, sustained encouragement, tireless efforts, and constructive input. My special thanks to Dr Trisia Farrelly for her Maori quote: "*Kia Kaha*", which means stay strong, and which lifted my spirits when I felt lost and ready to give up. Lastly, my sincere thanks to Associate Professor Bob Stewart who helped in reviewing my final thesis draft and provided concise and constructive comments. I will always look forward to the opportunity of meeting with you again in the future.

I am also very thankful for the invaluable support of Mrs Sharon Wright form the Ecology Department, Mrs Lois Wilkinson and Dr Julia Rayner from the Teaching and Learning Centre, and Mrs Dianne Reilly and Mrs Sylvia Hooker from the International Student Office. I would also like to thank all my friends in the Institute of Agriculture and Environment: Fleur, Kyleisha, Tessa, Peter, Chau, Jerry, Naomi, Alana, Matt, Panan and Chifuyu for their memorable friendship and support, and all my Thai friends for all their warm support throughout my PhD study.

I am deeply grateful to all the people who gave up their valuable time to participate in this study including the people of Baan Pa Hmoon, Bann Mae Klang Luang, Bann Mae Sa Mai, Baan Hmong Doi Pui, Baan Huay Ka Noon and Baan Pa Kluang villages, and the Thai government representatives, NGO representatives, academics and tourism operators who contributed to this study. I am also very thankful to Dr Wantanee Chawapong, Ms Kamthong Wiyok, Mr Kitti Munla, Ms Soraya Maita, and Mr Chatchawan Laowakul for their support during fieldwork. I would also like to acknowledge the support of the International Doctoral Degree Scholarship from the Faculty of Management Science, Prince of Songkla University, Thailand. Without their support, this research would not have been possible.

Finally, thank you from all of my heart to my beloved parents, Dr Aram and Mrs Duangruthai Phongchiewboon and my beloved brother, Mr Aekkavich Phongchiewboon. They have continually supported me and encouraged me to keep going when times were tough – encouragement was always just a phone call away. Without all these people, this thesis would not have been possible. I wish you all the best for good health and future endeavours.

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List of Acronyms

AIPP	Asia Indigenous People Pact
mASL	(Height in meters) Above Sea Level
CARE	Cooperative for Assistance and Relief Everywhere
CBE	Community-based Ecotourism
CBD	Convention on Biological Diversity
CBNRM	Community-based Natural Resource Management
CEESP	Commission on Environmental, Economic, and Social Policy
CIA	Central Intelligence Agency
DANIDA	Danish International Development Agency
DFID	(British) Department for International Development
DNP	(Thai) Department of National Parks, Wildlife, and Plant Conservation
DSLF	DFID's Sustainable Livelihood Framework
FAO	Food and Agriculture Organisation of the United Nations
FPP	Forest Peoples Programme
HDP	Highland Development Projects
ICEM	International Centre for Environmental Management
IDS	Institute of Development Studies
IMPECT	Inter Mountain Peoples Education and Culture in Thailand Association
IUCN	International Union for Conservation of Nature
IWGIA	International Work Group for Indigenous Affairs
MDGs	Millennium Development Goals

MUHEC	Massey University Human Ethics Committee
NESDB	National Economic and Social Development Board of Thailand
NGO	Non-Government Organisations
PAR	Participatory Action Research
PLA	Participatory Learning and Action
PRA	Participatory Rural Appraisal
QDA	Qualitative Data Analysis
RFD	Royal Forest Department of Thailand
RPF	Royal Project Foundation
RRA	Rapid Rural Appraisal
SDG	Sustainable Development Goals
SLA	Sustainable Livelihood Approach
SLF	Sustainable Livelihood Framework
TRI	Tribal Research Institution
TAO	Tambon Administration Organisation
TEK	Traditional Ecological Knowledge
UNCED	United Nations Conference on Environment and Development
UNDP	United Nations Development Programme
WCED	World Commission on Environment and Development
WCMC	World Conservation Monitoring Centre
WCPA	World Commission on Protected Areas

Glossary of Thai Words

Amphur	District areas in Thailand's administrative system.
Baan	House or living place.
Chum Chon	Communities.
Hmong	An ethnic group of hill tribe communities living in Chiang Mai, Northern Thailand, also referred to as *Meo*. Three Hmong communities residing in Northern Thailand's national parks were selected in this research.
Jungwat	Provincial areas in Thailand's administrative system.
Kariang	An ethnic group of hill tribe communities living in Chiang Mai, Northern Thailand, also referred to as *Karen* in English literature.
Khon Muang	The local people who live in the lowland areas of Chiang Mai province.
Moo Baan	Village.
Pga k'nyau	One of four cultural groups comprising the Kariang people, also referred to as Skaw Karen. Three *Pga k'nyau* communities residing in Northern Thailand's national parks were selected in this research.
Rai	A unit of land area within the traditional Thai land measurement system. This unit is equal to 0.16 hectares or 2.5 acres.
Tambon	Sub-district areas in Thailand's administrative system.

CHAPTER 1: INTRODUCTION

1.1 Background

Worldwide, national parks have become a cornerstone of natural resource protection and biodiversity conservation efforts (Dudley, 2008; Dudley, Hockings, & Stolton, 2010; Naughton-Treves, Holland, & Brandon, 2005). National parks also provide a range of socio-economic benefits through tourism development, including cultural, spiritual, scientific and educational benefits, and a wide range of recreational opportunities for present and future generations (Ferraro, Hanauer, & Sims, 2011; Hanna, Clark, & Slocombe, 2008; Prato & Fagre, 2005). In response to global conservation efforts, the number of national parks and other protected areas has increased exponentially, with most of this growth taking place in developing countries (Naughton-Treves *et al.*, 2005). However, the establishment of national parks in developing countries within South-East Asia has often created conflict over the use of customary natural resources. Protected area regulations present changes and challenges to the livelihoods of local and Indigenous communities residing within and adjacent to the national parks (Ellyn & Masuda, 2008; Ghimire, 1994; Hanna *et al.*, 2008).

In Thailand, a total of 127 national parks have been established over the last 50 years (DNP, 2014). The transformation of Northern Thailand's forest land into national parks has created complex management systems comprising of ecological entities with many stakeholders, including local and hill tribe communities (Dearden, Chettamart, Emphandu, & Tanakanjana, 1996; ICEM, 2003; Johnson & Forsyth, 2002; Laungaramsri, 2002; Roth, 2008). A common dilemma of national park management at the local level relates to conflicts that arise between conservation interests and the preservation of local livelihoods (Hares, 2009; Roth, 2008). Many hill tribe communities have had to adapt to changes in their land rights, and other land use constraints that limit their access to customary resources (Fujita, 2003; Hanna *et al.*, 2008). To address the potential conflicts caused by these changes, social aspects, such as, the enhancement of socio-economic well-being, has become an important element of park management (Ellyn & Masuda, 2008; Hanna *et al.*, 2008). In order to benefit both conservation and socio-economic development, the role and function of national parks have expanded from purely biodiversity conservation to improving human well-being (Naughton-Treves *et al.*, 2005). As a result, over the past two decades, several national and international efforts have been made to enhance the participation of local and Indigenous peoples in park

management through the development of co-management initiatives and agreements (Armitage, Marschke, & Plummer, 2008; Berkes, 2007, 2009).

The United Nations Declaration on the Rights of Indigenous People (2007) has been widely recognised and implemented in global national park management (Makagon, Jonas, & Roe, 2014; P. K. Walker, Rylands, Woofter, & Hughes, 2010). The International Union for the Conservation of Nature (IUCN, 2009), suggests that the management of protected areas, such as national parks, should be included within the content of national park management, as it is significant to the existence of the Indegenous[1] people who live withinin or adjacent to the parks. These Indigenous people have a strong relationship to their natural resources, which they utilise in customary livelihoods. The understanding of Indigenous peoples' livelihoods and their traditional knowledge, and their cultural and customary natural resource management practices are important to widening background knowledge, which can be used to improve natural resource management, including within national parks (Corrigan & Hay-Edie, 2013; IUCN 2014). In 2011, the World Commission on Protected Areas (WCPA) and the IUCN Commission on Environmental, Economic, and Social Policy (CEESP) emphasised enhancing the role and participation of Indigenous people as important for the long-term sustainable development of national park management (Borrini-Feyerabend *et al.*, 2013; Kothari *et al.*, 2015).

Since the late 1990s, co-management initiatives have been initiatied and implemented in several national parks in Thailand, with a particular focus on Northern Thailand's national parks (Parr, Jitvijak, Saranet & Buathong, 2008). In Thailand and Northern Thailand, the development of co-management initiatives has evolved over time with the support of several international organisations, and has concentrated on seeking a way to reduce conflict over natural resources and promote the involvement of local and Indigenous hill tribe communities as an important part of national conservation policies (Neef, Onchan, & Schwarzmeier, 2003; Parr, 2000; Parr, Jitvijak, Saranet, & Buathong, 2008). The development of co-management initiatives has strengthened the involvement of government institutions, non-government organisations (NGOs), academics, tourism agencies, local and hill tribe communities, and policy-makers in the management of Northern Thailand's national parks. The process,

[1] Hereafter throughout my dissertation, I will use a capital "I" for the term Indigenous people to show respect, as they are a significant group under national park management, who should not be impoverished or marginalised due to chages in government and conservation policies. Under national park management systems and regulations, the Indigenous hill tribe communities have adapted their livelihood strategies as well as engaged conservation activities in order to achieve a better quality of living, whilst also protecting their environment, culture and local knowledge.

however, is not seamless due to continual change, and many of the conflicts between national park officials and hill tribe communities remain unresolved. An investigation of the development and implementation of co-management initiatives in Northern Thailand's national parks is one of the key focuses of this study.

To obtain a greater understanding of the inter-relationships between park management and hill tribe communities, this study includes an overview of the ecological and socio-economic aspects of Northern Thailand's national park management and Indigenous hill tribe communities' livelihoods. A number of Northern Thailand's Indigenous hill tribe communities have settled in the forested mountainous regions and watershed areas that encompass a diversity of plant and wildlife species (Cummings, 2002; Kunstadter, 1988). The diverse livelihoods of these communities span a variety of knowledge, languages, spiritual beliefs and religion, cultures, agricultural practices, settlement patterns, and adaptive living strategies. The availability of natural resources is crucial for sustaining the livelihoods of the Indigenous hill tribe communities. Prior to the development of these areas as national parks, their livelihoods relied on their access to natural resources, subsistence agriculture and ecological knowledge that helped them to live sustainably in the forest areas (Anderson, 1993; McKinnon, 1998).

Since the early 1950s, Northern Thailand's forest areas have been gradually degraded as a result of over-exploitation and commercial logging by European companies (Ingram, 1971; Lakanavichian, 2001) and, more recently, by the development of tourist infrastructure in response to economic growth (Cropper, Puri, & Griffiths, 2001; Hafner, 1990). To protect the remaining forest areas, the Royal Forest Department (RFD) of Thailand passed the National Park Act (1961) and Forest Reserve Act (1964). Since the early 1960s, the RFD has increased the number and size of national parks established throughout Thailand, and more forest areas have been designated as national parks. Between the mid-1960s and early 1990s, the Thai government applied the traditional Western approach to Northern Thailand's national park management. As a result, this approach proved to be problematic in national parks that were settled by hill tribe communities (Dearden *et al.*, 1996; Ghimire, 1994; Gray, Piprell, & Graham, 1994). Authorities attempted to relocate some communities to areas adjacent to the national parks. However, due to conflicts and insufficient resources for relocation, many communities were not relocated, but instead had limitations imposed upon their livelihoods (A. Walker & Farrelly, 2008).

Under national park regulations and land use restrictions, many Indigenous communities lost land tenure rights, faced limited access to natural resources (Roth, 2008), and had their traditional land use curtailed (Forsyth & Walker, 2008). To address this problem, the Royal Project Foundation (RPF) has worked alongside government institutions and non-government organisations (NGOs) to reconcile the existing conflicts through various programmes (Forsyth & Walker, 2008; Johnson & Forsyth, 2002; Phongpaichit, Piriyarangsanan, & Treerat, 1996). These programmes include conservation and sustainable agricultural activities that integrate local ecological knowledge into land management practices, as well as introducing new techniques. As a result, a new approach to park management, involving collaboration and reconciliation with these communities is evolving (Forsyth & Walker, 2008; Johnson & Forsyth, 2002).

Although Indigenous hill tribe communities are legally able to live within the national parks, they must comply with national park regulations (Englehart, 2008; Forsyth & Walker, 2008; Ganjanapan, 1998). These communities have undergone dramatic changes to their land use options including the prohibited access to many of their customary natural resources within the protected forest areas. To overcome these vulnerability factors, they have adapted their livelihood strategies to conserve their limited resources and utilise them more efficiently (Forsyth & Walker, 2008; Johnson & Forsyth, 2002).

The establishment of national parks has also provided a range of new opportunities for the hill tribe communities through the development of community-based conservation, ecotourism, and other co-management initiatives (Dearden *et al.*, 1996; Hvenegaard & Dearden, 1998b). With the support of external organisations, the hill tribe communities have developed livelihood strategies to live sustainably, and are developing ways to adapt to political changes, environmental degradation, and external socio-economic development pressures. They have also benefited from increased tourism development, particularly since 1997 when the Thai government began to heavily promote tourism in order to boost economic growth and help lead the country out of the Asian Financial Crisis (Clewley, 1998; Cohen, Teo, Chang, & Ho, 2001; Cumming-Bruce, 1999). The Tourism Authority of Thailand (TAT) launched several campaigns to promote nature-based tourism such as, the '1998 and 2000 Visit National Parks Year', 'Unseen Thailand', and 'Amazing Thailand' campaigns (Cohen *et al.*, 2001; McDowall & Wang, 2009; Tourism Authority of Thailand (TAT), 1997, 2009).

The revenue from tourism is a primary source of income for Thailand and several campaigns have promoted Northern Thailand as a premier ecotourism destination with a variety of natural landscapes (Hvenegaard & Dearden, 1998a, 1998b; Kontogeorgopoulos, 2000; Kontogeorgopoulos & Chulikavit, 2010; Tourism Authority of Thailand (TAT), 1996, 1997). The Thai Constitution (1997) and its 2007 amendment afford local and Indigenous communities an important role in community-based conservation (Charas & Weist, 2010; Sims, 2010). In response, many local and Indigenous hill tribe communities have established their own community-based tourism and ecotourism ventures in Northern Thailand's national parks (Hvenegaard, 1996; Hvenegaard & Dearden, 1998b; Kontogeorgopoulos & Chulikavit, 2010). In some instances, an overemphasis on economic growth has also led to unsustainable tourism development, such as, rapid infrastructure development to serve mass tourism, which can be found in many of Northern Thailand's national parks. This has led to negative impacts including environmental degradation and wildlife habitat fragmentation in many of Thailand's national parks (Cropper *et al.*, 2001; Hvenegaard & Dearden, 1998a; Kontogeorgopoulos, 2000; Kontogeorgopoulos & Chulikavit, 2010; Sims, 2010). One response to these problems has been the Decentralisation Act of Thailand (1999). This Act emphasises collaborative natural resource management and decision-making processes that enhance local participation in conservation activities, and is aligned with community-based natural resource management (CBNRM), community-based tourism and ecotourism (Emphandhu & Chettamart, 2003; Sims, 2010).

Management systems of Northern Thailand national parks have evolved alongside changes in government and national development policies. Deficiencies in participatory and consistent national park management have compromised socio-ecological sustainability. These issues are pertinent to management of Northern Thailand's national parks and relate to land rights manifesting many complex conflicts between people livelihoods and national park management. Furthermore, the key barrier to socio-ecological sustainability is prioritisation of economic development over socio-ecological imperatives in the national park management. As a result, management of national parks in Northern Thailand needs improvement in collaborative natural resource management as a way of co-management development with supports to people's livelihoods residing in the parks. There is need to address issues of historical and current injustice by securing communities' rights and enhancing sustainable conservation.

Several consultations in co-management development, such as the Joint Management of Protected Areas (JOMPA) during 1998 to 2008 and the Whakatane Mechanism since 2012 have been initiated and implemented by collaboration between the Thai government, national park officials, and international development organisations. These co-management initiatives also provide a greater focus on socio-economic imperatives, particularly for social equity and environmental sustainability. Both co-management initiatives have been seen as a way to develop adaptive co-management to confront changes in political and national conservation policies. As noted in the literature review, adaptive co-management emphasises the process of learning by doing and reviews of successes and failures of the previous co-management initiatives. Attempts to establish practical adaptive co-management initiatives, JOMPA and the Whakatane Mechanism have been applied in Thailand, particularly in the northern Thailand as models of good governance, including the participation of local and Indigenous communities in policymaking processes. Details of JOMPA and Whakatane Mechanism have been provided in the literature review chapter.

1.2 Problem Statement

Northern Thailand's national parks were established to protect natural resources and provide society with a range of socio-economic benefits through tourism development. The initial management systems of Northern Thailand's national parks were influenced by western conservation approaches that emphasised the prohibition of people living in protected areas. However, the majority of Northern Thailand's national parks are areas in which Indigenous communities live (HDP, 2009; Highland Symposium, 2004). As a result of the implementation of the Land Reform Act (1954), National Park Act (1961), and Forest Reserve Act (1964), approximately one million hill tribe people living within, and adjacent to, Northern Thailand's national parks have had to adapt their traditional livelihood strategies to comply with national park regulations and land use restrictions (HDP, 2009; IMPECT & FPP, 2006).

Over the last three decades, there have been serious conflicts over natural resource use, land ownership and conservation practices between national park authorities and Indigenous hill tribe communities. Recently, some of these conflicts have been resolved through reconciliation processes developed as part of an emerging collaborative national park management approach. The Thai Constitution encourages Indigenous communities to participate in conservation practices and local policy-making processes. However, many

Indigenous hill tribe communities still face vulnerability factors, including the impacts of political change, and external socio-ecological development pressures, which may also lead to unsustainable livelihoods (HDP, 2009). Signficiant improvements are still needed, particularly in relation to equitable natural management, conservation benefits and genuine local participation in collaborative national park management decision-making. In this context, it is important to understand the diversity of hill tribe communities' livelihoods and environmental management practices. This study will provide insights on community engagement in natural resource management and participation in co-management, including actual and potential livelihood strategies, and how the communities can be empowered to achieve their aspirations. To date, little research has been carried out to identify the needs and responses of the Indigenous hill tribe communities to current national park management and co-management development.

1.3 Research Aim

The aim of this research is to assess the livelihood strategies and environmental management practices in Northern Thailand's national park communities to enable thees communities to improve their quality of living.

1.4 Objectives

In seeking to fulfil the research aim, four research objectives will be addressed:

1. To apply the DFID[2] sustainable livelihood framework (DSLF) to explore the livelihood strategies and environmental management practices of the participating Indigenous hill tribe communities.

2. To critically review the development of management strategies and co-management initiatives in Northern Thailand's national parks.

[2] The Department for International Development (DFID) is located in the United Kingdom (U.K.). The DFID sustainable livelihood framework (DSLF) is a notable framework that is widely applied in various aspects of livelihood development and research, with a focus on poverty reduction, in order to achieve the Millennium Development Goals (MDGs) and Sustainable Development Goals (SDGs) respectively. The DSLF has also been suggested and applied as an adaptable framework to investigate people's livelihoods in and adjacent to protected areas and national parks in order to improve conservation practice (J. B. Bennett & Dearden, 2014; N. Bennett, 2010; Mbile *et al.*, 2005; Neef *et al.*, 2003; Salafsky & Wollenberg, 2000).

3. To employ participatory rural appraisal methods to gain insights into Indigenous livelihood strategies and environmental management practices employed in the case study sites.

4. To make recommendations for the future management of Northern Thailand's national parks.

1.5. Researcher Position and Educational Background to this Research

I was born in Chiang Mai province in Northern Thailand and lived there for more than twenty-five years before I moved to Bangkok, where I lived for two years. My parents, my younger brother and I belong to the Thai ethnic group. I studied my Bachelor (1999-2003) and Masters Degrees (2004-2006) at Chiang Mai University (CMU) for six years. My major was ecology with a focus on environmental science and biodiversity research, which examined the use of bio-indicators, such as, aquatic insects and lichens as biological components of an Environmental Impact Assessment (EIA). While I was studying my Bachelor and Master Degrees, I also had an opportunity to study with Dr. Stephen Elliot who is the Director of FORRU (Forest Reforestation unit) and teaches about plant ecology and reforestation techniques. At this time, I participated in a reforestation activity in Baan Hmong Mae Sa Mai village in Doi Suthep-Pui national park, where I was introduced to Mr. Neng, who also works with FORRU. During the last semester of my Masters Degree at CMU, I also became interested in the impacts of unsustainable tourism development on biodiversity and environmental degradation. These interests led me to work for two years as a tour guide (2006-2008), while also working as a freelance research assistant in several projects related to tourism development and environmental impacts. During this time, I also had the opportunity to travel to many of the national parks in Northern Thailand. At times, I noticed changes in the environment caused by the rapid establishment of tourism infrastructure within each national park, and in some places, I also observed the involvement of the Indigenous hill tribe communities in community-based tourism and ecotourism.

Seeking strategies to enhance environmental protection and sustainable tourism management, particularly within the national parks, became my motivation to undertake a second Masters Degree in International Tourism Management during 2009 and 2010, at the University of Bedfordshire, England. At that time, I discovered that conventional tourism management models were more focussed on business and profit, whereas I wanted to find a more

environmentally sustainable framework for national parks to work within. This became the topic of my dissertation that formed part of my Masters' thesis. My Masters' thesis was entitled: *Strategic Planning of Ecotourism Management in Doi Inthanon and Doi Suthep-Pui National Parks in Northern Thailand*. In writing this thesis, I had the opportunity to learn about ecotourism and community-based ecotourism development in both of these national parks, and I was able to provide recommendations for the strategic planning of ecotourism management by using a Strength, Weakness, Opportunity and Threat (SWOT) Analysis, and providing a Yearly Road Map to national park officers and related organisations. I also challenged myself to find a way for the three goals of sustainable development (environmental protection, economic growth, and social sustainability) to work together in these sites. In this Masters research, I found that the Indigenous hill tribe communities in my case study sites faced different external socio-economic development pressures that impacted on their customary livelihood practices. While some of them did receive some benefits, I questioned how these community-based conservation practices could be sustained long-term, since these communities had also experienced unsustainable tourism and undergone dramatic changes in national conservation policies.

Both of my Masters Degrees gave me the inspiration to continue my Doctoral Degree in Natural Resource Management at Massey University in New Zealand. Thus, when the opportunity came for me to undertake my PhD Study, I already had some background knowledge of two of the national parks: Doi-Inthanon National Park and Doi Suthep-Pui National Park, though I was no longer affiliated with any person within the previous study sites. I do not consider there to be any conflicts of interests, as I had not been in contact with Dr. Stephen Elliot and Mr. Neng for more than five years before I started my PhD study, and I had not had the opportunity to visit any hill tribe villages since I graduated my Masters Degree in the U.K.

Once I passed the confirmation for Doctoral Research, I was able to establish new contact with various groups of national park stakeholders, academics and hill tribe villages in order to collect data. I also included Dr. Stephen Elliot and Mr Neng again as they were key informants in my selected case study sites. In addition, many of the heads of community and community members had changed, and I had to establish new contact with them in order to undertake this PhD research. I selected Dr. Wantanee Chawapong as my research co-ordinator as she did not work for any of the national parks and had no conflicts of interest. She works at the Provincial Health Promotion Organisation in Chiang Mai and her expertise

relates to the enhancement of rural communities' health supports and the management of health care centres.

During the timeframe of Doctoral research, I have reviewed a wide range of research papers relating to the impacts of national park management on Indigenous people's livelihoods. I wanted to extend my knowledge from the previous research and focus on the relationships between people and parks, particularly in terms of livelihood strategies and environmental management practices. I chose to continue to work within the national parks in Northern Thailand as I was already familiar with their forest areas, and felt that any information I gained from field studies would add depth to the previous studies and enable me to provide a range of recommendations to improve national park management in Northern Thailand and enhance sustainable development there. I selected three national parks in Chiang Mai as my case study sites, namely, Doi Inthanon National Park, Doi Suthep-Pui National Park and Ob Luang National Park. One of the three selected national parks, Ob Luang National Park held more interest because there are two main ethnic hill tribe groups, Pga K'nyau and Hmong, residing in the same national park. For this national park, I had to establish new networks as this area was more remote. This meant a greater challenge in gaining their trust. Over the course of my PhD, it became evident that there is still much to be learned about national park management strategies and their impacts on the resident Indigenous communities. I also realised that there were multiple and sometimes subtle differences in the management strategies employed within each national park, which seemed to influence the perceptions and attitudes of the national park stakeholders and resident Indigenous hill tribe communities. This was further compounded by government changes and changes in legislation.

1.6 Research Limitations

The pernicious and corrosive impact on sustainability and human welfare from concerns that arise from the abuse of human rights cannot be overstated. From the participant perspective it is understandable that responses to a formal survey may contain an element of strategic bias from the outset. During this study, I became aware of acquiescence bias in the survey phase. Given the numerous reports of human rights abuses in Thailand's national parks (Asia Indigenous People Pact, 2007, CIA, 2016; Erni, 2008, International Work Group for Indigenous Affairs, 2015), I was surprised that these issues were underplayed in the case study parks. Topics concerning discrimination, human rights abuse and land confiscation are considered as culturally and politically sensitive and have been used to create long-term

conflicts to offend or disadvantage particular groups of people including hill tribe communities.

Honesty and transparency were vital to the collection of data and the analysis of this study. Consequently, I organised the gathered interview data under the key components of the DSLF and analysed these data to inform the research findings. Methodological and data triangulation techniques that facilitated the validation of data through cross verification from two or more methods and sources were used. All research findings were incorporated with the related literature review to provide robust discussion and to contribute to the conclusions and recommendations of this study.

During fieldwork (February to August 2012), I did not observe or receive any interview data relating to human rights abuses, such as, human trafficking, land confiscation, evictions or criminalization of traditional livelihoods. However, the data did find that the six case study sites have experienced and have had to deal with the impacts of national park establishment in terms of land use restrictions, lack of land ownership and land title certificates, and lack of access to customary resources within the protected forest areas. In the six case study sites, many community members reported that they have had to adapt livelihood strategies and incorporate traditional knowledge into environmental management practices to enable environmental sustainability and socio-economic well-being. The new government (the Thai Military Government) has led the country since the 22nd May 2014. As part of their rule, they have added conservation policies and reforms, such as, the "Return Forest Policy", which impacts on the community land of many of the Indigenous communities residing in the protected areas (CIA, 2016; International Work Group for Indigenous Affairs, 2015). However, as the period for data collection in this study occurred before 2014, and these reforms had not yet been implemented, these developments are not reflected in the interview data.

1.7 Contribution of Research

There is limited literature that explores the relationships, perceptions, and aspirations of the Indigenous hill tribe communities' livelihood strategies and their environmental management practices in Northern Thailand's national parks. The DSLF has been developed as an integrated approach for analysing the role of policies, institutions, and governing processes in relation to the development of people's livelihoods as well as the improvement of

conservation practices (J. B. Bennett & Dearden, 2014; N. Bennett, 2010). The DSLF has been widely applied as an analytical tool in the studies of Indigenous people's livelihoods within protected areas, particularly in developing countries (N. Bennett, 2010; Clark & Carney, 2008). However, very few researchers have adopted this framework to investigate the links between the development of livelihood strategies and the management of Northern Thailand's national parks. Recently, Bennett and Dearden (2014) suggested that the DSLF enables them to understand local culture and political context in order to explore how local people develop community-based natural resource management in the marine national parks of Southern Thailand.

This study attempts to assess the diversity of livelihood strategies and environmental management practices between two different cultural groups, Pga k'nyau and Hmong, residing within Northern Thailand's national parks by utilising the DSLF as an analytical tool. This study also explores a range of development and conservation programmes implemented by various external organisations in order to understand these communities' own livelihood aspirations and how they have developed current livelihood strategies towards long-term sustainable development.

This study also investigates the development of co-management initiatives. It examines how these communities participate in conservation activities and collaborative policy-making, in the context of efforts to change the management approach in Northern Thailand's national parks from top-down to bottom-up. Little research has investigated this effort, or the extent to which co-management has been achieved from the perspective of the communities involved in these initiatives. This study also examines how the development of community-based conservation could also provide valuable information for future national park management in order to achieve sustainable development. This study will provide recommendations to policy-makers and national park officials to improve current national park management practices.

1.8 Thesis Outline

This thesis consists of eight chapters, including this introductory chapter. Chapter Two explains the concept of sustainable livelihoods and explores the origin and development of the sustainable livelihood approach (SLA). It then introduces and explains the DFID's SLF and each of its key components. Critiques of the framework are considered and the potential

for the DSLF to contribute to studies investigating national park management and Indigenous communities' livelihoods are discussed.

Chapter Three provides an overview of Thailand and presents background information on Thailand's forests and the management of Thailand's national parks. The second section of this chapter explains the development of co-management in Thailand and the links between tourism development and conservation practices in Thailand's national parks. Details of the development of Northern Thailand's national parks and their links with Indigenous people's livelihoods are then described. The final section provides background information on Northern Thailand's national parks, including current conservation policies and environmental management practices. It also provides an overview of the livelihoods of the Indigenous hill tribe people living within these parks.

Chapter Four focuses on the research methods employed in this study. It begins with an introduction of the value of qualitative research methods, including an explanation of the participatory rural appraisal (PRA) method and the multiple case study approach. The second section provides details of fieldwork preparation, including the process of obtaining permission to conduct this research project. This section also explains the selection of case study sites and research participants, along with the research ethics and related protocols required. The details of the data collection methods employed have been outlined, together with the rationale for each method. The limitations affecting the field research are outlined, including practical issues and other data collection constraints. The chapter explains how the DSLF was used for structuring interview questions and analysing the results, and for data management, analysis, and interpretation.

Chapter Five describes the characteristics of the hill tribe communities participating in this study, the Pga k'nyau and Hmong communities. This chapter also provides details of the case study sites, which are located in Doi Inthanon, Doi Suthep-Pui, and Ob Luang National Parks.

Chapter Six present the results relating to the Pga k'nyau and Hmong communities' livelihood strategies and environmental management practices.

Chapter Seven provides a discussion of the key findings and explains the changes and challenges of livelihood strategies and development opportunities across the Indigenous hill tribe communities residing in Northern Thailand's national parks. It includes a discussion of

the key components of the DSLF, and the co-management initiatives and community-based conservation methods employed to achieve sustainable livelihoods.

Chapter Eight summarises the research findings and provides recommendations for the future management of Northern Thailand's national parks. This chapter also offers suggestions for future research.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This study explores the diversification of livelihood strategies and environmental management practices of Indigenous hill tribe communities residing in Northern Thailand's national parks. These communities have had to adapt livelihood strategies to comply with national park regulations and land-use restrictions. A framework is required to investigate the effects that national park management have had on the livelihood strategies and environmental practices of these communities, as well as the opportunities and constraints created.

This chapter will explore the literature around the sustainable livelihood approach (SLA) as developed and applied by the British Department for International Development (DFID). The DFID developed the concepts and principles of the sustainable livelihood approach to create a sustainable livelihood framework (SLF); a multidisciplinary approach to investigating the opportunities and constraints facing local and Indigenous communities (J. B. Bennett & Dearden, 2014; N. Bennett, 2010). The DFID's SLF (hereafter DSLF) is widely recognised and accepted as an influential framework for environmental management and development studies (Geiser, Müller-Böker, Shahbaz, Steimann, & Thieme, 2011; Mazibuko, 2013; Toner & Franks, 2006).

The six communities studied in this research have developed livelihood systems and built social resilience in response to external interventions and economic development pressures. These changes present challenges to local and Indigenous communities such as, alterations to land use restrictions, government policies, laws, and regulations and the integration of agricultural practices as well as shifts in social and cultural values, particularly among the younger generations. These changes have also created opportunities for the Indigenous communities to improve their socio-economic well-being, such as, through the development of community-based ecotourism and co-management initiatives. For the details of research findings and further discussion will be presented in Results and Discussion Chapters.

There are eight main sections in this chapter, including this introductory section. Section 2.2 begins by explaining the origins and concepts associated with the study of sustainable livelihoods. Section 2.3 explores the development of the sustainable livelihood approach.

Sustainable development goals (SDGs) are a well-known implement for achieving better and sustainable livelihood development. The evolution and implementation of SDGs is detailed in Section 2.4. Section 2.5 introduces the DSLF, and discusses how it is applied in practice. In this study, the DSLF was used to generate interview questions, and was applied as an analytical tool to assess the livelihood assets, strategies and outcomes for the Indigenous hill tribe communities. The value of this framework is considered together with critiques of the approach. The potential for the DSLF to contribute to studies investigating national park management and Indigenous communities' livelihoods is also explained in this section. The links between Indigenous people's livelihoods, sustainable tourism development and natural resource management will be explained in Section 2.6. Section 2.7 explains adaptive co-management and natural resource management. The final section provides a summary of this chapter as background to the research.

2.2 Sustainable Livelihoods: Origins and Concepts

The concept of sustainable livelihoods (SL) was first introduced in 1987 by the World Commission on Environment and Development (WCED) in a report entitled *Food 2000: Global Policies for Sustainable Agriculture* (WCED, 1987a). The WCED proposed SL as an integrating concept for assessing SL security, linking it to basic human needs, food security, sustainable agricultural practices, and poverty alleviation. Protection for a stable human population; a condition for the sustainable management of farming systems; and a means of changing the unsustainable processes of rapid economic development and rural-urban migration were identified as the three key elements of SL (WCED, 1987a). It was argued that the selection of sustainable livelihood strategies is crucial to achieving sustainable development outcomes, such as, socio-economic well-being, particularly in poor and rural communities (WCED, 1987a).

Also in 1987, the WCED published a report entitled *Our Common Future*, commonly referred to as the Brundtland Report (WCED, 1987b). This report defined sustainable development as "development that meets the needs of the present without compromising the ability of future generations to meet their own needs" (WCED, 1987b, p.43). The concept of SL was elaborated upon further, leading to its use in strategic policies to address issues such as, poverty and environmental degradation. The Brundtland Report stated that the application of strategies for livelihood security enhances the capability of an individual or community to secure ownership and access to livelihood resources leading to sustainable livelihood

outcomes (WCED, 1987b). A definition of SL and livelihood security as an integrated concept was also proposed by this report:

> Livelihood is defined as adequate stocks and flows of food and cash to meet basic needs. Security refers to secure ownership of, or access to, resources and income-earning activities, including reserves and assets to offset risk, ease shocks and meet contingencies. Sustainable refers to maintenance or enhancement of resource productivity on long-term basis. A household may be enabled to gain sustainable livelihood security in many ways - through ownership of land, livestock or trees; rights to grazing, fishing, hunting or gathering: through stable employment with adequate remuneration or through repertoires of activities (WCED, 1987a).

The Brundtland Report highlighted the significance of poverty alleviation strategies for coping with environmental destruction (WCED, 1987b). The production of agricultural products and food security is essential for creating sustainable livelihoods (Hulse, 1995). In 1992, The United Nations Conference on Environment and Development (UNCED) also applied the SL concept to developing strategies for poverty alleviation and environmental protection leading to long-term sustainable development (Pound, 2003; N. Singh & Gilman, 1999; UNDP, 1999; United Nations, 1992). The Brundtland Report has, however, been criticised for not paying enough attention to other influential causes of environmental destruction, such as the over-consumption of natural resources and the rapid economic growth in rich countries (Sneddon, Howarth, & Norgaard, 2006).

Chambers and Conway (1992) have expanded upon the WCED's original definition of SL, emphasising the importance of resilience and capability for the future of a community. They define sustainable rural livelihoods at the household level in the following way:

> A livelihood comprises the capabilities, assets (stores, resources, claims and access) and activities required for a means of living; a livelihood is sustainable which can cope with and recover from stress and shocks, maintain or enhance its capabilities and assets, and provide sustainable livelihood opportunities for the next generation; and which contributes net benefits to other livelihoods at the local and global levels and in the short and long term (Chambers & Conway, 1992, p.6).

Furthermore, Carney (1998) explains that the concept of sustainable livelihoods includes the sustainability of natural resources:

> A livelihood comprises the capabilities, assets (including both material and social resources) and activities required for a means of living. A livelihood is sustainable when it can cope with and recover from stresses and shocks and

> maintain or enhance its capabilities and assets both now and in the future, while not undermining the natural resource base (Carney, 1998, p. 2)

The DFID applied this definition in their sustainable livelihood framework, which has been widely applied by several organisations to develop quality of life in rural communities, particularly in developing countries. To achieve a sustainable livelihood, three factors are vital: capabilities, equity, and sustainability. Each of these is discussed in the following sections.

Capabilities

Capabilities refer to the outcomes of livelihood strategies that can enhance access to necessary resources (Bebbington, 1999) including, the availability of assets and the opportunities for people (Ellis, 1998, 2000). Sen (1999) defines livelihood capabilities as the ability of local and Indigenous people to obtain the necessities to sustain their livelihoods, while maintaining natural resources for long-term use. The ability to access livelihood resources is fundamental to securing livelihoods, and may contribute to reducing poverty in a community (Chambers & Conway, 1991). As such, local and Indigenous peoples have to adapt their livelihood strategies in order to deal with vulnerability factors, such as, disasters, seasonal changes, and socio-economic development pressures.

The alleviation of poverty and engagement in sustainable environmental management is the primary objective of the Millennium Development Goals (MDGs) to enhance human development and socio-economic well-being, particularly in developing countries (Sneddon, Howarth, & Norgaard, 2006). The UNDP has supported many national governments attempting to achieve the MDGs through the Guidelines for the Sustainable Livelihood Framework (UNDP, 2000). These guidelines emphasise the enhancement of local and Indigenous people's capabilities, particularly in terms of accessibility to natural resources. The MDGs further emphasise international concerns about environmental problems and their impacts on people and their livelihood activities, placing these concerns within a policy framework for sustainable development (United Nations, 2012).

The capability of communties to access natural resources for customary livelihoods can be seen as a fundamental part of human capital, which is the central focus of the UNDP sustainable livelihood approach, as shown in Figure 2.1 (UNDP, 1999). The UNDP's SLA stresses connections between people (livelihood capabilities), tangible assets (stores and resources), and intangible assets (claims and access) (UNDP, 1999). Consideration of these

connections is particularly useful for this study. Tangible assets include, the availability of resources within national parks' areas, such as, forest land and water resources, including agricultural lands and Indigenous communities' areas. The UNDP's SLA has been used as a framework to improve the sustainability of livelihoods of the poor and other vulnerable communities by strengthening socio-economic well-being (Krantz, 2001).

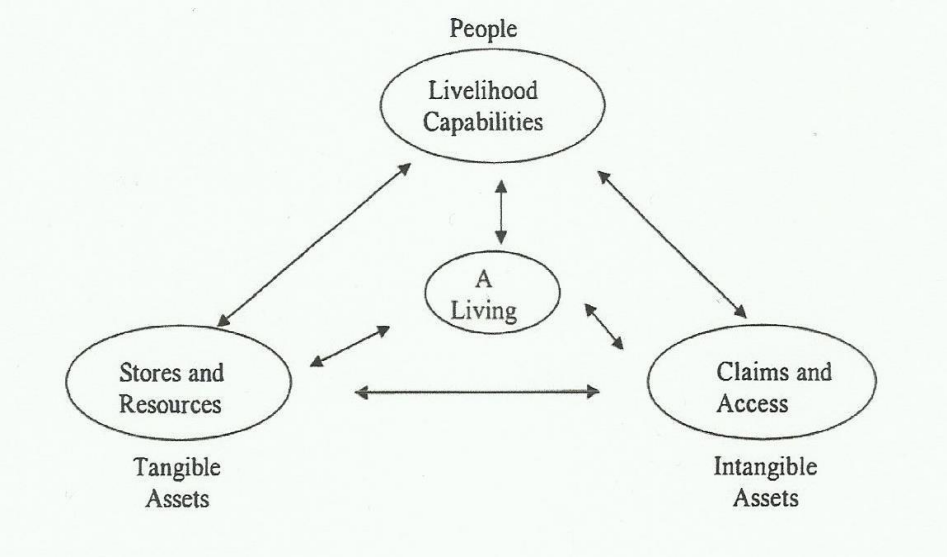

Figure 2.1 The Components of the UNDP's Sustainable Livelihood Approach.
Source: Krantz (2001, p. 14).

Equity

The Brundtland Report highlighted equity in socio-economic development as a vital part of the long-term sustainable development of local and Indigenous communities in pursuing a better standard of living whilst conserving natural resources for future utilisation (WCED, 1987b). Sharing natural resources and benefits between stakeholders and communities needs to ensure that the equitable distribution of income, assets, capabilities, and opportunities occurs, as a way to enhance local and Indigenous peoples' sustainable livelihoods long-term (Chambers, 1995, 1997; Chambers & Conway, 1991). Equity also encompasses reducing discrimination against, and the marginalisation of, vulnerable people within society in order to increase socio-economic well-being, develop mutual understanding of sustainable livelihood development, and enhance the effectiveness of environmental management (Chambers, 1995, 1997; Chambers & Conway, 1991).

Sustainability

Another key component of the WCED's conceptualisation of sustainable livelihoods is sustainability (WCED, 1987a, 1987b). The sustainability of environmental, social, and economic outcomes can be seen as the goal of sustainable livelihood development (Chambers & Conway, 1991; Helmore, 1998; Helmore & Singh, 2001). The concept of sustainability has played an integral role in the development of sustainable livelihood approaches (SLAs), particularly in rural development studies (Niehof, 2004; Niehof & Price, 2001).

Chambers and Conway (1992) divide sustainability into two categories: environmental and social. Environmental sustainability refers to the avoiding of the over-use or over-exploitation of natural resources that can lead to further degradation, including the loss of natural resources and wildlife habitats. Social sustainability can be described as the capability to maintain socio-economic well-being and cope with vulnerability (Chambers, 1989; Chambers & Conway, 1991). Thus, social sustainability refers to the capacity of people's livelihoods to cope with external pressures, including stresses and shocks (Krantz, 2001). Stress can be defined as typically continuous and accumulated pressure (Chambers & Conway, 1991). Examples of stressors include poverty, restricted access to livelihood resources such as, food and water shortages, socio-economic development pressures, and environmental deterioration (Chambers & Conway, 1991). In contrast, shocks can be described as impacts which are sudden, unpredictable, and traumatic, such as, disasters and epidemics (Chambers & Conway, 1991). Chambers and Conway (1991) and Krantz (2001) argue that the definition of livelihood sustainability has to include the ability to withstand and recover from both stress and shock.

The concept of sustainable livelihoods is given consideration in the Food and Agriculture Organisation's (FAO) report *The State of Food Insecurity in the World* (FAO, 2000). This report focuses on food security and access to natural resources for local and Indigenous communities in rural areas (FAO, 2000). It demonstrates how applying the SL concept to poverty alleviation and environmental management allows a broader focus for livelihood studies (Baumgartner & Högger, 2004; Carney, 2002). Indeed, this concept has been developed as an integrated development paradigm that allows policy-makers to develop policies and strategies for rural livelihood development, sustainable natural resources, and poverty alleviation (N. Singh & Gilman, 1999; UNDP, 1999).

The Links between Poverty Alleviation and Environmental Protection

Chambers and Conway (1991) point out that the concept of sustainable livelihoods includes the consideration of rural livelihood development, policy-making processes, and the equitable sharing of resources for all people, including the poor (Chambers & Conway, 1991). The development of the SL concept has broadened further research in the fields of social inequality, economic sustainability, and environmental stewardship, and has helped in leading to sustainable practices at household and community levels (Brocklesby & Fisher, 2003; Helmore & Singh, 2001; Shankland, 2000).

Chamber and Conway (1992), Scoones (1998), Carney (1999), and Hussein (2002) propose that the SL concept is an attempt to go beyond the conventional thinking around poverty alleviation, which has been found to be too specific in characterising poverty in terms of low income and economic marginalisation. Thus, the concept of sustainable livelihoods encompasses other vital aspects of poverty, such as, vulnerability and social exclusion (Krantz, 2001). An investigation of poverty is necessary to assess the relevant factors that either limit or enable the capability of local and Indigenous people to access livelihood resources and make a living using ecologically, socially, and economically sustainable processes. The concept of sustainable livelihoods can offer a more holistic view of both the internal and external factors that cause poverty problems (Brocklesby & Fisher, 2003). However, the reality of people's livelihoods is complex and is influenced by many factors including, the ecological, economic, and social, political, cultural, and spiritual components of each person's community (Baumann & Subir, 2001; Brocklesby & Fisher, 2003; Clark & Carney, 2008; Geiser *et al.*, 2011).

Food Security, Employment, and Poverty Alleviation

Chambers and Conway (1991) identify food security, employment and poverty alleviation as key considerations in the study of sustainable livelihoods. Increasing food production is a means of promoting food security, particularly for agrarian communities. The surplus of agricultural products can be sold in local markets to generate an alternative household income (Chambers & Conway, 1991). However, unsustainable agricultural management practices may lead to environmental problems, such as air and water pollution, that affect quality of life (Baumgartner & Högger, 2004; Brocklesby & Fisher, 2003). Agrarian communities should utilise sustainable farming practices, such as, organic farming and permaculture, and

reduce the use of chemical fertilisers and pesticides (Baumgartner & Högger, 2004; Brocklesby & Fisher, 2003).

A lack of employment and alternative income opportunities are considered as vulnerability factors and causes of poverty, which could be led to impoverish and unsustainable livelihoods (Ahmed, Siwar, & Idris, 2011; Chambers, 1995). While the connections between sustainable livelihoods and employment were not explicitly identified or explained in the Brundtland Report (Sneddon *et al.*, 2006; WCED, 1987b), the *3rd Commitment of the World Summit for Social Development* states that sustainable development and employment are clearly interconnected (UNDP, 1999). The concept of sustainable livelihoods has evolved to not only focus on employment opportunities and income generation, but also resource access. Nevertheless, poor people with low incomes can sustain their livelihoods through a complex combination of livelihood strategies and activities which may or may not involve formal employment or income generation (Farrington, 2001; Farrington, Carney, Ashley, & Turton, 1999).

In many rural areas, local and Indigenous communities have had to adapt their livelihood strategies to manage the limited natural resources. They do this through a range of subsistence and commercial activities that often include agriculture and fisheries (Carney, 1998; Chambers & Conway, 1991; Ellis, 1998; Nowak, 2003). Further challenges to the livelihoods of local and Indigenous communities encompass several conditions, such as, fluctuations in and loss of natural resources, climate change, seasonality, and limited access to land (Brocklesby & Fisher, 2003; Marschke & Berkes, 2006). Poor and marginalised people have their own perception of poverty that recognises problems such as, a lack of necessities (for example, food, shelter, health care, and education), as well as insufficient household incomes (Baulch, 1996; Chambers, 1995).

One way of conceptualising poverty is in terms of 'the poverty line', which refers to an economic measurement of household income and consumption (Chambers & Conway, 1991). This is relatively easily quantified and is thus commonly used for purposes of measurement and comparison (Chambers, 1995; World Bank, 2000). The poverty line (or poverty threshold) is the minimum level of income considered adequate in a particular country (Gillie, 1996; Ravallion, 1992). It is noted that the common understanding of the poverty line is significantly lower in developing countries than in developed countries (Gillie, 1996; Hagenaars & de Vos, 1988; Piachaud, 1987). In 1990, the World Bank defined a common

international poverty line (referred to as low-income, particularly in developing countries) as the equivalent of US$1 per day (Sachs, 2005; World Bank, 2000). In 2008, the World Bank revised the poverty line to US$1.25 per day to account for inflation (Kristof & Smith, 2013; Ravallion, Chen, & Sangraula, 2009). In 2014, the World Bank increased the average poverty line in developing countries from US$1.25 to US$2 per day, indicating that approximately 2.2 billion people lived on less than US$2 per day in 2011, and approximately 1 billion people still live in extreme poverty (on less than US$ 1.25 per day).

The UNDP has suggested that the Human Development Index (HDI) is a potential indicator for measuring the trend of rural livelihood development with particular attention on human capital (UNDP, 1999). The HDI includes life expectancy, average education, literacy rates, and Gross Domestic Product (GDP) per capita, thus reflecting the present situation of each community's livelihoods and identifying potential areas for improvement (UNDP, 1999).

The MDGs further emphasise international concerns about environmental problems and their impact on people and their livelihood activities; placing these concerns within a policy framework for sustainable development (Sneddon, Howarth, & Norgaard, 2006). The World Bank (2000) presents three strategies for poverty alleviation. The first is to promote opportunities through economic growth, providing greater opportunities for social benefits and equity. Secondly, government officials should assist both local and Indigenous communities in sustainable livelihood development through the facilitation of local empowerment and participation in natural resource management. The third strategy involves increasing access to necessary subsistence resources, thereby enhancing livelihood capabilities and security and further reducing vulnerabilities.

Alleviation of poverty and engagement in sustainable environmental management are the primary objectives of the Millennium Development Goals (MDGs) to enhance human development and socio-economic well-being, particularly in developing countries (Sneddon, Howarth, & Norgaard, 2006). The UNDP have supported many national governments attempting to achieve the MDGs through the Guidelines for Sustainable Livelihood Framework (UNDP, 2000). These guidelines emphasise the enhancement of local and Indigenous people's capabilities particularly in terms of accessibility to natural resources. The MDGs further emphasise international concerns about environmental problems and their impacts on people and their livelihood activities, placing these concerns within a policy framework for sustainable development (United Nation, 2012).

Over the past two decades, extreme poverty has diminished as a primary mission of the World Bank and this mission is also supported through the collaboration of national and international organisations including development agencies. In 2014, the World Bank announced their primary mission: "Our Dream is a World Free of Poverty". This mission has underpinned 145 countries including several developing countries, and has been seen as a primary objective for coping with poverty problems. However, the practical implementation of this in each country has faced different challenges particularly, changes in political and natural resource management policies. The first Millennium Development Goals (MDGs) were introduced and applied with the idealistic objective of ending extreme poverty by the first half of the year 2015.

At present, the problems of poverty and extreme poverty still remain in many countries particularly, in South Asia and Sub-Saharan Africa, such as, within some of the Indigenous communities residing in fragile environments and remote areas (World Bank, 2016). Specifically, a number of Indigenous communities residing within protected areas of several developing countries have had to adapt their livelihood strategies as a way of dealing with limitations in access to good schools, healthcare, electricity, clean water and other basic livelihood resources, often determined by the inequality of socio-economic status and differences in gender, ethnicity and varied geography (Cernea & Schmidt-Soltau, 2006; Ferraro, Hanauer & Sims, 2011). Some of those Indigenous communities have been able to move out from poverty. However, sometimes this is only temporarily due to many vulnerability factors, such as, economic shocks, food insecurity and climate change. These vulnerability factors affect livelihoods and force them back into poverty. Finding solutions to eradicate poverty and other vulnerability factors is needed to enable them to achieve the greater improvement of socio-economic well-being.

2.3 Sustainable Development Goals: Origins and Implementation

The term 'sustainable development' has been well-recognised and popularised since 1987, and was indicated in the first report on the sustainability entitiled 'Our Common Future' by World Commission on Environment and Development (WCED) with its definition and inclusive explanation of key principles (WCED, 1987). This report is also known as the Brundtland report, which included the classical definition of sustainable development: "development which meets the needs of the present without compromising the ability of future generations to meet their needs" (WCED, 1987, p. 43). This report was accepted and

implemented by many international organisations by developing their own policies and related strategies for solving poverty, food insecurity and environmental degradation problems caused by unsustainable land management and rapid human population growth (Common & Charles, 1992; Holmberg, 1992; De Graaf, Musters, & Ter Keurs, 1996; Mebratu, 1998). In 1992, the United Nations General Assembly provided a guideline of sustainable development and included its implementation, and they set up the UN conference on Environment and Development (UNCED) in Rio de Janeiro, Brazil. This conference is also well-known as the Rio Summit and the Earth Summit (Anand & Amartya, 1996; Beckerman, 1994; UN, 1992, 1997).

The concept of 'sustainable development' is variously interpreted by different countries; the key principles are shared in common. This concept comprises of a convergence between the three pillars of economic development, social equity, and environmental protection (Daly, 1995; Harris, Wise, Gallagher, & Goodwin, 2001; UNEP 2000, 2001). Seeking potential stratagies to enhance socio-economic wellbeing and ecological sustainability long-term, the United Nations (UN) (2006) explained that the Millennium Development Goals (MDGs) were established and implemented in 2000 to achieve eight goals before 2015. These eight goals encompassed the eradication of poverty, the support of education, the promotion of local empowerment and gender equality, child mortality, the improvement of maternality health, the reduction of HIV/AIDS, malaria and other diseases, the protection of environmental sustainability and the development of global partnership for development (Haines & Cassels, 2004; Jeff, 2010; UN, 2006). This conference was also acknowledged as a key milestone for creating global development goals, which were applied in many countries to improve socio-economic development and environmental protection policies to achieve national sustainable development goals.

Efforts to achieve the MDGs were supposed to be achieved by 2015. However, the development agendas need to be improved to achieve sustainable development, as the existing ones do not encompass the four dimensions of the global vision; social development, environmental sustainability, economic equity, and peace and security (United Nations, 2012, 2015, 2016). Even though governments have adopted the principles of the MDGs to enact their own development policies, these policies are likely to be impracticable because they are top-down policies rather than bottom-up ones. In order to achieve meaningful sustainable development, there is a need to include local participation in policy-making process as well (Sheddon, Howarth & Norgard, 2006; Griggs et.al., 2013). In addition, many countries have

used this framework purely as a rhetorical and political device to boost economic growth, whilst overlooking social and ecological sustainability (Christens and Speer 2006, Boggia and Cortina 2010).

In 2015, the UN announced the Sustainable Development Goals (SDGs) as an outline of a target relating to future international development and included the objectives of the MDGs. The SDGs was created to replace the MDGs. The recent SDGs (implemented in 2015 and due to be completed in 2030) adopt a set of goals to end poverty, protect the planet and ensure prosperity (UN, 2015). To achieving the SDGs requires a level of participatory dialogue, cooperation and, most importantly, power dynamics and social equity that is complicated and which is differently reflected in today's multilateral institutions and political regimes of each country (Boggia and Cortina 2010, Agbiboa 2012). Therefore, the achievement of the SDGs must account for the diverse ways societies manage their own social, economic and environmental affairs. Strategic planning is needed to move from talk to action. While the sustainable development paradigm has been widely used and implemented for more than 30 years, this is a relatively short timeframe for changing in some areas that have confronted long-term conflicts over land use and the allocation of related resources (Christens and Speer 2006, Boggia and Cortina 2010). There is a need for improvement in terms of the evolution of development path that is truly concerned with equity, poverty alleviation, reducing resource use, and integrating economic, environmental, and social issues in decision making through the enhancement of local participation and empowerment.

One of the main challenges of the 21st century deals with sustainable management and livelihoods in protected areas and national parks. The management of protected areas and national parks involve complex collaborations amongst political leadership and the government as policy-makers, including national park officials, other multi-faceted stakeholders, communities and local institutions as a part of significant challenges (Hanna, Clark, & Slocombe, 2008). The increase in demand for ecosystem services from agricultural systems, concerns of land rights and social equity, and the high depletion rate of forest areas and biodiversity seem formidable issues to tackle. These issues also entail the necessity to mainstream sustainable development and related strategies that emphasise the involvement of local and Indigenous communities in decision-making processes. In this context, the need for enhanced knowledge exchange is becoming paramount alongside "bottom-up" participatory approaches into conservation policies. The links between co-management, sustainable

development and people livelihoods residing in and adjacent to national parks will be discussed in section 2.7.

2.4 The Development of the Sustainable Livelihood Approach

The concept of sustainable livelihoods (SLs) has emerged in response to the need for a more effective strategy to address the problems of unsustainable natural resource management and poverty (Scoones, 1998, 2009). The concept of SLs was adopted and developed as the foundation of the sustainable livelihood approach (SLA) to explore the linkages between poverty, food security, and environment changes within rural development and environmental studies (Ahmed *et al.*, 2011; N. Bennett, 2010; Krantz, 2001; Toner & Franks, 2006). The principles of the SLA have been developed with the objective of enabling researchers and rural development practitioners to gain a more holistic understanding of the livelihoods of local and Indigenous communities (Clark & Carney, 2008; Toner & Franks, 2006). Consistent themes within the SLA include poverty elimination and access to necessary livelihood resources to achieve sustainable living and maintain socio-economic well-being (Farrington *et al.*, 1999; Krantz, 2001).

The broad objective of the SLA is to examine how people access and use necessary resources to sustain their livelihoods (Scoones, 1998, 2009). The SLA identifies strategies to cope with poverty problems and natural resource scarcity (Clark & Carney, 2008), and therefore can be used to learn how people develop strategies to achieve sustainable livelihoods under specific conditions in various geographical locations. Toner and Franks (2006) explain that the SLA was developed and applied as a set of guiding principles supported by an analytical framework and acts as a tool to analyse livelihood resources and strategies and target interventions.

The SLA is a practice-oriented approach to poverty alleviation and natural resource management which has been used by several well-recognised bilateral and multilateral development agencies, including the Food and Agriculture Organisation (FAO), United Nations Development Programme (UNDP), Institute of Development Studies (IDS), and DFID. In particular, the DFID's sustainable livelihood framework (DSLF) is one of the most widely used practical frameworks. The DSLF has been widely applied in various aspects of livelihood studies in many countries (J. B. Bennett & Dearden, 2014; Elasha, Elhassan, Ahmed, & Zakieldin, 2005; Turton, 2000), including as an analytical tool to assess livelihood

assets, strategies, and outcomes for local and Indigenous people who live in and adjacent to national parks and protected areas (J. B. Bennett & Dearden, 2014; N. Bennett, 2010). While the key principles of the DSLF are applied by various organisations (including some of those listed above), the specific approach to implementation and methods used differ based on the study purposes (Clark & Carney, 2008; Toner & Franks, 2006). For example, assisted by the DFID, the FAO applied the DSLF in a livelihood development programme from 2001 to 2007.

A thematic paper published by the FAO as part of this programme explained that the key components of the DSLF can highlight and reinforce Indigenous peoples' aspirations for food and livelihood security as a goal to achieve poverty reduction and sustainable livelihood outcomes (Kalafatic, n.d.). The FAO also found that the use of the DSLF could help identify and prioritise appropriate strategies to support Indigenous people in addressing livelihood challenges in relation to land use and natural resource use, as well as changes in traditional agriculture, knowledge systems, and cultural practices (Kalafatic, n.d.). Some of these challenges and changes have resulted in increased limitations and opportunities for the diversification of livelihood strategies, which is a specific focus of this study. Many authors recommend diversification as a means to strengthen social and economic resilience in the face of shocks, trends, and seasonality (Birch-Thomsen, Frederiksen, & Sano, 2001; J. Fox *et al.*, 2012; Marschke & Berkes, 2006).

In conclusion, the concept of sustainable livelihoods has evolved to explore the roots of poverty, food insecurity, and environmental degradation (Ahmed *et al.*, 2011; N. Bennett, 2010; Krantz, 2001; Toner & Franks, 2006). It has also informed the development of the sustainable livelihood approach, and several sustainable livelihood frameworks. The most influential of these is the DSLF which has been widely applied in environmental management and rural development studies (J. B. Bennett & Dearden, 2014; Elasha *et al.*, 2005; Turton, 2000). The DSLF enables researchers and development practitioners to use a wide range of research methods to gain insight into the development of Indigenous people's livelihoods, especially those with limited livelihood resources (Clark & Carney, 2008; Toner & Franks, 2006). For the purpose of this study, the DSLF has been widely adopted and applied in studies of Indigenous people's livelihoods within protected areas and national parks, and is considered to be the most appropriate approach. The details of this framework will be outlined in the next section.

2.5 DFID's Sustainable Livelihood Framework

The British Department for International Development developed its sustainable livelihood framework with the broad aim of helping to reduce poverty and enhance socio-economic well-being in developing countries (Carney, 1999; Clark & Carney, 2008; DFID 1997, 1999; Hussein, 2002). In 1997, the publication of the UK Government White Paper on International Development identified the promotion of sustainable livelihoods as the key strategy for reducing poverty in developing countries (Brocklesby & Fisher, 2003; Carney & Britain, 2003; Hussein, 2002). The DFID also outlined a set of six core principles (Figure 2.2), which can be applied to livelihood development activities in order to improve quality of life among poor and rural communities in developing countries (C. Ashley & Carney, 1999; Krantz, 2001).

- **People-centred**: sustainable poverty elimination will be achieved only if external support focuses on what matters to people, understands the difference between groups of people, and works with them in a way that is congruent with their current livelihood strategies, social environment, and ability to adapt.
- **Responsive and Participatory**: poor people themselves must be key actors in identifying and addressing livelihood priorities. Outsiders need processes that enable them to listen and respond to the poor.
- **Multi-level**: poverty elimination is an enormous challenge that will only be overcome by working at multiple levels, ensuring that micro-level activity informs the development of policy and an effective enabling environment, and that macro-level structures and processes support people to build upon their own strengths.
- **Conducted in Partnership**: with both the public and the private sector.
- **Sustainable**: there are four key dimensions to sustainability – economic, institutional, social and environmental sustainability. All are important – a balance must be found between them.
- **Dynamic**: external support must recognize the dynamic nature of livelihood strategies, respond flexibly to changes in people's situation, and develop longer term commitments.

Figure 2.2 The Core Principles of the DSLF.
Source: Ashley and Carney (1999, p. 7).

Although these principles can be applied to any livelihood development activities or related projects, the DFID argues that such activities and projects should be designed to promote poverty reduction and maximise livelihood benefits. Thus, the DSLF can be applied to investigate various aspects of people's livelihoods with a view to contributing to long term sustainable livelihood development (C. Ashley & Carney, 1999; Krantz, 2001). These principles are not only based on moral grounds, but are pragmatic in recognising the significance of community-based research in the context of achieving sustainable livelihoods and the need for local participation in long-term sustainable development. Thus, the DSLF is not intended to represent the reality of any specific setting. Rather, it provides an analytical tool to facilitate a broad and systematic understanding of the key components of sustainable livelihoods: vulnerability context, livelihood assets, transforming structures and process, livelihood strategies, and livelihood outcomes (as illustrated in Figure 2.3). It can also provide insight into the relationship between each component that influences the livelihoods of individuals and communities (DFID 1999).

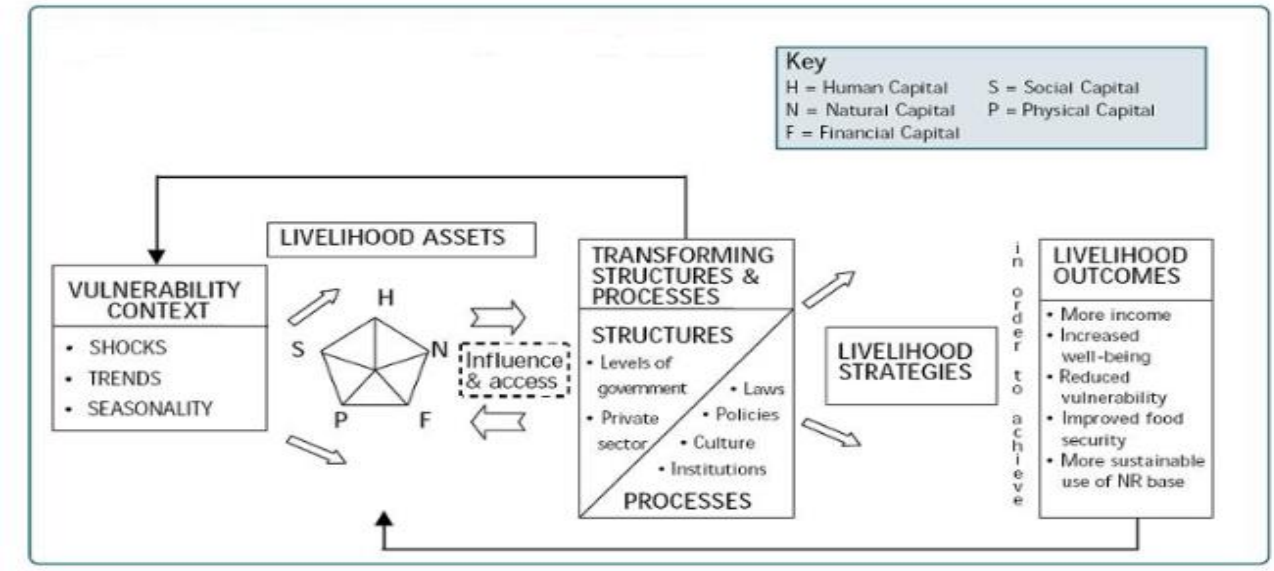

Figure 2.3 The DFID's Sustainable Livelihood Framework.
Source: DFID (1999, p.1).

Vulnerability contexts refer to the way social and environmental pressures including, shocks (natural disasters, war and political instability), trends (economic trends and social changes), and seasonality (climatic changes, floods and droughts) impact on the accessibility of livelihood assets (C. Ashley & Carney, 1999; Carney, 1998, 2002; DFID 1999). Thus, vulnerability contexts encompass complex external influences, which directly and indirectly impact local and Indigenous communities, requiring them to develop livelihood strategies to

confront challenges and pursue sustainable livelihoods. Vulnerability contexts affect the availability of the five types of livelihood assets, and contribute to changes in livelihood strategies and outcomes (Ashley & Carney, 1999; DFID 1999). However, it is important to note that not all trends or seasonality lead to negative impacts. For example, the use of new technologies and agricultural equipment can increase productivity without causing environmental problems, so this trend may be positive for communities.

The pentagon in Figure 2.3 represents the five interrelated types of livelihood assets: human capital, natural capital, financial capital, physical capital and social capital. The definitions of each type of capital are provided in Table 2.1. An important part of livelihood analysis is to use research methods to assess the nature of each type of livelihood asset, as these directly impact livelihood strategies and livelihood outcomes.

Livelihood strategies refer to the varied capabilities of individuals and each household to access and obtain basic livelihood resources. In general, people employ and develop livelihood strategies over time to achieve positive livelihood outcomes (Figure 2.3). These strategies are chosen by individuals and adapted over time in each household and community to deal with the impacts of vulnerability factors (Ahmed *et al.*, 2011; C. Ashley & Carney, 1999; Scoones, 1998; Toner & Franks, 2006). Livelihood strategies can be flexible in response to changing circumstances and are sometimes combined to achieve desirable livelihood outcomes (Carney, 2002; Ellis, 2000; Farrington, 2001). Positive sustainable livelihood outcomes include increased income and well-being, reduced vulnerability, improved food security, and more sustainable natural resource use (C. Ashley & Carney, 1999; DFID 1999). Livelihood strategies may also be combined with other activities that Scoones (1998, p.9) calls "livelihood portfolios", which exist in collective activities to maintain a basis of living in relation to coping strategies. These coping strategies have developed differently in each household and community to face a range of socio-economic challenges, changes of season, and the interference of development trends that can lead to different livelihood outcomes in varying degrees of severity.

Table 2.1 Types of livelihood assets.

Livelihood Assets	Definition
Human capital	"Human capital represents the skills, knowledge, and ability to labour, and good health that together enable people to pursue different livelihood strategies and achieve their livelihood objectives" (DFID, 1999, p.7).
Natural capital	"Natural capital is the term used for the natural resource stocks from which resource flows and services (e.g. nutrient cycling, erosion protection) useful for livelihoods are derived" (DFID, 1999, p.11).
Financial capital	"Financial capital denotes the financial resources that people use to achieve their livelihood objectives. It includes available stocks and regular inflows of money" (DFID, 1999, p. 15).
Physical capital	"Physical capital comprises the basic infrastructure (e.g. roads, rails and telecommunications) and producer goods needed to support livelihoods" (DFID, 1999, p.13).
Social capital	"Social capital refers to the social resources upon which people draw in pursuit of livelihood objectives which are developed through networks and connectedness, membership of more formalised groups, relationships of trust, reciprocity and exchanges" (DFID, 1999, p.9).

Source: The DFID (1999, pp. 5-16)

Institutional processes and organisational structures can influence people's access to livelihood assets, and shape their livelihood strategies, as well as their vulnerability context (DFID 1999; Scoones, 1998). In terms of transforming structures and processes, Scoones (1998) explains that transforming processes can include changes in laws, policies, cultures, and the structures of institutions. Such changes directly and indirectly cause changes in the access to livelihood assets and livelihood strategies (Ahmed *et al.*, 2011; C. Ashley & Carney, 1999; Baumann & Subir, 2001; Clark & Carney, 2008).

Using the DSLF to investigate the diversification of livelihood strategies and environmental management practices encourages researchers and development practitioners to take a broad and systematic view of the key components of peoples' livelihoods and the relationships between them. The comprehensive guidelines provided by the DFID for using the DSLF have been applied in several studies of environmental management and rural development (C. Ashley & Carney, 1999; Clark & Carney, 2008; Toner & Franks, 2006). The DSLF highlights the interconnections of livelihood components, which people often carry out in

combination to make a living. Researchers have presented shared findings that people's livelihoods often depend on a number of different types of social relations and economic activities (Geiser *et al.*, 2011; Mazibuko, 2013; Toner & Franks, 2006).

The DSLF can be applied with a broader focus than mere poverty reduction. Many researchers have used this framework to understand other aspects of unsustainable livelihoods, for example the lack of land ownership or constraints associated with living under national park regulations (J. B. Bennett & Dearden, 2014; N. Bennett, 2010). The DSLF provides a simple way of describing the complexity of the transforming structures and processes related to both the physical and governance context within which people's livelihoods are constructed (N. Bennett, 2010; Hobley, 2001; Hussein, 2002). It can provide insight into the transforming political structures and processes of conservation policies that play a vital role in shaping livelihood resources, strategies, and outcomes in the context of the relationships between people and national parks, as well as the role of Indigenous communities in the policy-making process and natural resource management. One approach to incorporating politics is to investigate the perceived power relations in multifaceted local institutions and Indigenous communities, including their networks (as social capital), which influence their livelihood strategies (Glavovic, Scheyvens, & Overton, 2002; Mazibuko, 2013). The concept of 'social capital', which refers to the networks of formal and informal institutions, which enable people to mobilise resources and achieve common goals, is significant to this debate (J. Fox, 1997; Hussein, 2002; Murray, 2002). An understanding of these institutions is important for an in-depth exploration of the complexities of social relationships and power dynamics embedded in such communities (Carney & Britain, 2003; Clark & Carney, 2008; Glavovic *et al.*, 2002).

2.5.1 Criticisms of the DFID's Sustainable Livelihood Framework

While the DSLF can contribute to achieving a more holistic view of the combination of resources important to local and Indigenous people, it has been criticised for its narrow approach to social capital, with some academics arguing that it should be applied more broadly so as to better reflect the cultural and political contexts embedded in each community (Cahn, 2006; De Haan, 2012; De Haan & Zoomers, 2005). However, it can also be argued that the concept of social capital as defined within the DSLF, encompasses social structures and networks, including cultural contexts (e.g. cultures, traditions, and beliefs) and political contexts (e.g. local institutions, policies, and community roles). Both cultural and political

contexts are significant aspects of social capital within any community. Social capital is integral to the social structure and resilience of each community in response to environmental changes and socio-economic development pressures that impact on people's livelihoods as well as on other livelihood capitals (human, natural, physical, and financial) (Baumgartner & Högger, 2004; Cahn, 2002). This view is shared by Geiser *et al.* (2011) who argue that the DSLF is well recognised as a useful framework for exploring people's livelihoods in a wide range of studies on environmental management and sustainable development. However, there is still a need to focus on the accessibility of each livelihood capital in contributing to Indigenous people's livelihoods and the ultimate goal of achieving sustainable development.

Defining and measuring livelihood capital can be problematic because the relationships between each type of livelihood capital are complex and overlapping (Beall, 2002). For instance, social relationships may define access to natural resources (Pound, 2003; J. Pretty, 1999). Livelihood capital can be organised and controlled by individuals, groups or a community. The management of natural resources relates to the multifaceted relationships between the national park stakeholders, and Indigenous communities and their networks (Ahn & Ostrom, 2008; Baumann & Subir, 2001). Many researchers argue that conceptualising capital in this way reduces it to neoclassical economic concepts and attempts to incorporate capitalism in every aspect of people's livelihoods, particularly in development studies and environmental management (Beall, 2002; J. Fox, 1997; Pound, 2003; Reynolds, Farley, & Huber, 2010).

There are also difficulties in establishing links between micro-level realities (for example, Indigenous people's livelihoods) and macro-level policies (such as, national conservation and socio-economic development policies) (Singh & Gilman, 1999). It has been challenging to persuade government development agencies, NGOs, and practitioners to work together at the micro-local level because they have different perceptions of livelihood development (N. Singh & Gilman, 1999). The DSLF focuses on rural communities where subsistence agricultural practices and fishing are the main livelihood strategies that depend on the availability of natural resources (Carney, 1998, 1999). There is far less research that uses the DSLF to investigate the livelihoods of urban people and their non-agricultural activities, which may also benefit from support through livelihood analysis and development interventions (Clark & Carney, 2008).

There have been some concerns that the DSLF inadequately addresses market trends and structures that impact rural people's livelihood strategies, particularly with regard to agricultural commodities (Carney & Britain, 2003). The agricultural products of rural communities reliant on market trends for demand and supply, should be included in the considerations of sustainable livelihood analysis (Almaric, 1998; Carney, 2002; Carney & Britain, 2003). Market demand is an external factor which impacts on communities and their community's trade with each other, and with tourists and visitors. One approach to understanding the concept of market supply and demand is to assess the different market contexts of each community, including the social capital within and between each community and then consider the roles the government plays in these (Almaric, 1998). Carney (2002) suggests that the use of market analysis (for example, supply chain or value chain analysis) can be applied to the DSLF to better understand the relationships and power structures within the market environment (Carney, 2002; Carney & Britain, 2003).

Carney (2003), Krantz (2001), and Hussein (2002) provide similar comments about the methodological and practical difficulties of using the DSLF. In the preparation stage, researchers must design a checklist of the key components of the framework and generate interview questions. Additionally, the researcher must spend considerable time in each case study site in order to understand the current situation and facilitate the different kind of participatory and analytical processes required.

Carney (2003) recommends that the DSLF should be used to find appropriate strategies for examining the causes of unsustainable livelihoods. However, using the DSLF in this way is not cost efficient and so is unlikely to be suitable for development agencies to rapidly conduct research and in hundreds of communities at once, particularly as the DSLF tends to consider the household as the basic unit of analysis rather than the community (Carney & Britain, 2003; Krantz, 2001). There is the concern that when using the household as the unit of analysis, the differing social status, economic status, interests, opportunities, decision-making power, and gender of members may lead to biased information. Carney (2003) suggests that the use of the DSLF should therefore consider these factors. Therefore, there is a need to gather information from several families for the disaggregation of such factors, including age and demographics. Using the DSLF requires flexible planning and time in order to gain insightful information and assess people's livelihoods within each community.

In summary, the DSLF facilitates an understanding of the links between people's livelihood strategies, the accessibility of assets, and the involvement of both formal and informal institutions and organisations. It is therefore a useful approach for gaining an understanding of the old and new challenges to people's livelihoods and the scope for enhancing sustainable livelihood development at the local level. It is essential for any analysis of sustainable livelihoods to involve local people so that their knowledge and perceptions can be taken into consideration.

2.5.2 The Use of the DFID's Sustainable Livelihood Framework in the Study of National Park Management

The DSLF is an influential framework for exploring the livelihood strategies and environmental management practices of Indigenous communities residing in national parks (Ashley & Carney, 1999; Ashley, 2000; Bennett, 2010; Bennett & Dearden, 2014). The DSLF can be applied as a framework for undertaking fieldwork and used as an analytical tool to identify the opportunities and constraints that Indigenous people have had to deal with in order to sustain their livelihoods (Ashley & Carney, 1999; Ashley, 2000).

In the context of the DSLF, a national park can be seen as a large social institution comprising a series of conservation policies and processes that are ratified and implemented by various levels of government sectors through applied governance and management practice. The DSLF has been suggested in the work of Bennett (2010) as a useful tool for analysing the impacts of national park management on livelihood strategies, outcomes, and assets. Indigenous communities' livelihoods are complex and dynamic, changing over time. Therefore, this framework can be applied to the investigation of the role of national park conservation policies, related institutions, and processes (namely, governance and management practices) in order to understand the sources of changes and challenges for the Indigenous people who live within national parks. There is a need to understand Indigenous communities' traditional knowledge, culture, beliefs, and practices as they relate to livelihood strategies and natural resource management practices (Berkes, 1995, 2004). Traditional knowledge in particular, refers to the ways in which Indigenous people use their knowledge in their relationship with the local environment. Indigenous people often have their own unique approach to managing natural resources in order to sustain their livelihoods (Marschke & Berkes, 2006). Traditional ecological knowledge (TEK) includes the beliefs and practices that sustain people's livelihoods while managing the surrounding natural

resources (Berkes, Colding, & Folke, 2003; Gadgil, Olsson, Berkes, & Folke, 2003). Berkes *et al.* (2003a, p.7) define TEK as:

> …the cumulative body of knowledge, practice and belief, evolving by adaptive processes handed down through generations by cultural transmission, about the relationship of living beings (including human beings) with one another and with their environment.

The use of TEK has become an integral component of successful conservation initiatives and environmental management (Berkes *et al.*, 2003; Gadgil *et al.*, 2003) with local and Indigenous people playing a significant role in environmental management (Berkes *et al.*, 2003; Gadgil *et al.*, 2003). Understanding the roles of Indigenous communities and their traditional knowledge is essential for developing conservation practices (Adams & Hutton, 2007; Johnson & Forsyth, 2002). Local empowerment, participation, and the mutual sharing of benefits have been highlighted as crucial factors for the sustainable management of national parks (Bennett & McGinnis, 2008; Dudley *et al.*, 2010; Jeanrenaud, 2002). The literature emphasises the need for policy-makers and national park managers to understand the voice of local and Indigenous communities regarding traditional knowledge and conservation practices (Johnson & Forsyth, 2002). This is a significant strategy in developing sustainable management practices for the national parks as well as for enhancing sustainable livelihoods (Lye, 2010; MacDonald, 1998; Marschke & Berkes, 2006; Mason, Baudoin, Kammerbauer, & Lehm, 2010). Globally there is increasing recognition of the value of a people-centred, rather than policy-centred, approach to natural resource management. This requires facilitating local community participation in policy-making processes and land use decision-making (Lamb, 2011; Lisen, 2005; Naughton-Treves *et al.*, 2005).

2.6 The Links between Indigenous Tourism and Natural Resource Management

In the literature on tourism, there is a growing focus on Indigenous tourism and its interconnections with natural resource development (Beeton, 2005; Collins, 1999; Farrelly, 2011; Foucat, 2002; Wearing & Neil, 2009; Shen, Hughey & Simmons, 2008; Yeoman, 2001). This has evolved alongside the term sustainable tourism. Sustainable tourism is built on the conceptual framework of sustainable development and thus holds the same primary objectives: to achieve effective natural resource management and enhance social equity and

economic development (Cole, 2006; Griggs et al., 2013). Literature on sustainable tourism has highlighted both the potential positive and negative impacts of tourism in protected areas where Indigenous communities reside. This includes economic and environmental benefits, the challenges of unequal power dynamics, equitable sharing of natural resources, and land rights (Kontogeorgopoulos, 2000; Libosada, 2009). From a sustainable development perspective, sustainable tourism covers social and environmental responsibility as well as socio-economic well-being.

The term 'ecotourism' was developed more than two decades ago and is the main concept in community-based ecotourism (CBE), which involves local communities working in close connection with the environment to create nature and culture-based experiences for tourists. Ecotourism is highlighted for its potential for sustainable development (Shen, Hughey & Simmons, 2008). In addition, ecotourism can enable Indigenous communities to be more involved in the environmental protection of national parks and contributes socio-economic benefits to communities (Fennell, Rob & Nigel, 2009), though conservation activities related to CBE involving ecological responsibility. Globally, ecotourism has been evolving along with current trends in cultural, agricultural and community-based tourism (Scheyvens, 1999). However, the mismanagement of ecotourism can result in a range of negative impacts on cultural norms and can change the socio-economic structure of Indigenous communities (Scheyvens, 1999; Fennell, Rob & Nigel, 2009).

From a tourism development perspective, ecotourism ventures can be considered 'successes' or 'failures' depending on how they maintain ecological sustainability and how the sharing of social and economic benefits are distributed within a social group (Farrell & Runyan, 1991; Scheyvens, 1999; Tsaur, Lin, & Lin, 2006; Weaver, 2005; Weaver & Lawton, 2007; Yeoman, 2001). A community-based approach to ecotourism recognises a need to enhance the participation and empowerment of local and Indigenous communities; it also promotes quality of life and natural resource conservation (Scheyvens, 1999). Community-based approaches attempt to prioritise socio-economic benefits for local and Indigenous communities as well as environmental concerns. These are all central to the empowerment concept. Consequently, Scheyvens (1999) has developed an empowerment framework, which built on Friedmann's empowerment framework (1992) to assess the impacts of ecotourism on local communities. Friedmann (1992) categorises empowerment in terms of psychological, social, and political empowerment. Scheyvens added economic empowerment as the first category because the development of ecotourism provides alternative incomes for

individuals and communities for enhancing socio-economic well-being. This revised framework provides measures to determine whether tourism impacts on the empowerment of Indigenous communities are either positive or negative.

According to Scheyvens's (1999) empowerment framework, there are four aspects of empowerment that should be considered when determining the impacts of ecotourism initiatives on local communities. Firstly, economic empowerment involves fair income distribution in local communities and consequently supports the communities to improve their own infrastructure. If ecotourism is invested in by local elites, outside operators and government agencies, then incomes may not be fairly distributed to Indigenous communities and they will not be able to improve the infrastructure. Secondly, psychological empowerment refers to the willingness to participate in ecotourism ventures and particularly to add the value of their local and Indigenous culture, their natural resources, and their traditional knowledge to ecotourism. As the development of ecotourism ventures can be sensitive to local people's cultural norms, so it is important to respect their culture and consideration of this would better the relationships between groups of tourists, visitors and local people. Thirdly, social empowerment involves maintaining or enhancing social cohesion as a vital part of social capital within communities. It is important that ecotourism considers how tourist activities could lead to social problems such as the perception of crowding, displacement from traditional lands, and loss of authenticity. Otherwise, social disempowerment would occur. Lastly, political empowerment refers to a community's political structure, and the competing needs and interests of all stakeholders and communities. For instance, many local and Indigenous communities often have to work under an autocratic and/or self-interested decision of their leaders (heads of community); this can be seen as political disempowerment. As a result, community members have to follow such decision without prior informing and participating in decision making processes.

In discussing the mechanisms of local empowerment, Sofield (2003) described the process of empowerment as a change in the power dynamic from those who hold all the power (the dominant) to those who hold none of, or little power (the dependent). However, Stone and Stone (2011) caution that though community collaborative partnership is a useful and necessary mechanism for organising stakeholders in ecotourism development, particularly community-based ecotourism (CBE), it may not be uniformly perceived as was the case within their research community in Botswana. They also draw attention to the possibility that

CBE efforts may not reconcile diverse stakeholders' viewpoints, contested settings or community heterogeneity.

Literature on sustainable tourism development involving the management of CBE has recently addressed issues related to the traditions of Indigenous communities' governance and decision-making systems (e.g. Farrelly, 2011). The participation and empowerment of local and Indigenous communities is the primary consideration for tourism management in ensuring sustainable practices. Yet true active participation and empowerment may be impracticable in the realities on the ground when local communities face different challenges from socio-economic and political changes; this can result in undesirable outcomes (Sofield, 2003). Collaborative decision-making processes and planning are challenged by multi-faceted policy-makers and the plethora of stakeholders vying for economic benefits and conservation interests (Sofield, 2003; Tosun & Timothy, 2003).

Tosun and Timothy (2003) further argue that the local community is most likely to know what will work and what will not work in the local conditions. They also argue that community participation can add to the democratisation process and has the potential to increase awareness and interest in local and regional issues. They suggest that democracy incorporates the rights of the individual, which often encourages equity and empowerment. Involvement in decision-making and planning requires appropriate collaboration and ethical principles that contribute to socio-economic well-being for local and Indigenous communities (Farrelly, 2013). The enhancement of community participation and empowerment is considered necessary to obtain community support for, and acceptance of, tourism development projects and to ensure that the benefits contribute to the needs of the local and Indigenous communities (Scheyvens, 2002; Farrelly, 2013).

To sustain CBE ventures and the development of Indigenous communities' livelihoods, the process of democratic decision-making is always challenged by the power dynamics which inevitably exist among policy-makers, stakeholders and related communities. One example of political will is that CBE is frequently applied as a focus for forest conservation policy to encourage local people to participate in national park management. Mitchell (2001) stated that the power dynamics and decision-making process between and within community groups may positively or negatively affect natural resource management practices. He also suggests that one way to resolve unsustainable CBE is learning from previous experiences. Empowerment is capacity of individuals or groups to determine their own affairs; it is the

process by which people exert control over factors that affect their lives (Scheyvens, 1999, 2002). Involvement of decision-making processes is considered as a vital strategy of social and economic empowerment for improving CBE ventures through the actively participation in conservation activities. However, active participation is frequently constrained because communities lack information and knowledge. If local people can access relevant CBE information, they will be able to participate in decision-making about tourism development processes (Cole, 2006). However, the mismanagement of ecotourism and CBE has led to 'green washing', a term that relates to the over-marketing and use of the terms 'ecotourism and CBE' as the rhetoric but without the ethical considerations of socio-economic and environmental sustainability (Kumar & Kumar, 2013). The result of such mismanagement is unsustainable development, the impoverishment of local people's livelihoods, and natural resource degradation (Kumar & Kumar). Thus, it is necessary to focus on a fine balance between socio-economic development and environmental protection to achieve long-term sustainable development.

2.7 Adaptive Co-management and Natural Resource Management

'Collaborative natural resource management' and 'co-management' of natural resource have become buzz words in relation to strategies towards long-term sustainable development (Berkes, 2009). Strategies for the long-term sustainable development of collaborative or co-management in natural resource management require power sharing and the full engagement of community leaders with government agencies involving local decision processes (Berkes, 2009; Carlsson & Berkes, 2005). Many authors now emphasise social resilience through adaptive and interactive governance (Brunner et al., 2005; Folke et al., 2005; Walker et al., 2002). Berkes recommends that the co-management shift toward adaptive co-management, a combination of adaptive management and collaborative natural resource management.

Adaptive co-management stresses the importance of "learning by doing" to support collaborative natural resource management, and to achieve socio-ecological sustainability (Armitage, Marschke & Plummer, 2008). Adaptive co-management includes learning from experience and adapting strategies to cope with socio-ecological changes. Learning by doing is a normative goal and process that requires greater specificity with approaches to achieve desirable outcomes of sustainable development. Ruitenbeek and Cartier (2001, p. 8) described adaptive co-management as "a long term management structure that permits stakeholders to share management responsibility within a specific system of natural resource,

and to learn from their actions." Based on this definition, learning and doing processes are paramount considerations for the development of adaptive co-management. Additionally, Pahl-Wostl and Hare (2005) describe adaptive co-management as a practical way of social learning that is involved with strategic planning in natural resource management and that provides action plans. To achieve sustainable development, good governance of natural resource management is a key for enhancing collaborative decision-making and planning, as a significant part of adaptive co-management which needs to learn from successes and failures.

Under the administration of national park management, Borrini-Feyerabend et al. (2004) suggested that the prerequisite of adaptive co-management is a deep understanding of history and current conflict and competition in natural resource sharing among related stakeholders and communities residing in protected areas and national parks. Moreover, under the condition of socio-ecological changes, the vulnerability of communities has been increasing; they need to actively learn from experiences and respond to the complexity of changes at the same time. Therefore, learning by doing requires a greater attention to collaborating and competing needs to enhance capability and building social resilience, while recognising the problems of previous environmental management in the past. Building the capacity and social resilience of individuals and societies to collaboratively learn through on-going changes and uncertainty is a fundamental principle to improve environmental management and to support socio-ecological sustainability (Cartsson & Berkes, 2005; Keen et.al, 2005). To cope with uncertainties and complexities, proponents of adaptive co-management recommend this approach fits with social and political empowerment through sharing control of resource use and collaborating in natural resource management. In addition, the evolution of adaptive co-management also contributes shared responsibilities for using, managing and allocating resources among multiple related stakeholders and communities.

2.8 Conclusion

This chapter has examined the concept of sustainable livelihoods, highlighting the importance of capabilities, equity and sustainability, and exploring the links between poverty alleviation, food security, employment and environmental protection. It then described the development of the sustainable livelihood approach, and introduced the DSLF, which has been widely used in rural development and environmental management studies seeking practical strategies for poverty reduction, food security, and sustainable development (J. B. Bennett & Dearden,

2014; N. Bennett, 2010). The DSLF identifies several key factors contributing to sustainable livelihood outcomes including vulnerability contexts, livelihood assets, livelihood strategies and transforming structures and processes. Despite a number of practical and methodological issues, the DSLF is widely regarded as a significant analytical tool for achieving a broad and systematic understanding of the key components of people's livelihoods and the relationships between each component.

Using the DSLF can enhance the understanding and analysis of livelihood strategies and environmental management practices, and enable researchers to provide recommendations to develop sustainable livelihoods and inform improved environmental management. It enables researchers to gain holistic information about the constraints and opportunities facing communities, and suggests ways to deal with these factors under the restrictions imposed by national park regulations. In this study, the DSLF was applied as a theoretical framework to identify and analyse the livelihood strategies and environmental management practices among six Indigenous hill tribe communities living within Northern Thailand national parks. In particular, the DSLF provided an analytical checklist to facilitate investigation into vulnerability contexts, livelihoods assets, transforming structures and processes and livelihood strategies and outcomes. The usefulness of the DSLF in generating interview questions to gain in-depth information from multiple groups of research participants will be explained and discussed in Chapter Four. First, however, it is crucial that the analysis of livelihoods is informed by an understanding of the specific context of each case study. As such, Chapter Three will provide important background information on Northern Thailand's national parks and their management systems.

CHAPTER 3: NATIONAL PARK MANAGEMENT IN NORTHERN THAILAND

3.1 Introduction

The preceding chapter reviewed the concept of sustainable livelihoods and described the value of the DSLF as a framework for investigating the livelihoods of people who reside in and adjacent to national parks. In this study, the DSLF was used as an analytical tool for examining the accessibility of livelihood resources and exploring the diversification of livelihood strategies and the development of environmental management practices among Indigenous hill tribe communities in Northern Thailand's national parks.

This chapter describes the historical, political, and geographical background of Northern Thailand's national parks and management systems. This information provides an important context for the results and discussion that will be presented in Chapters Six and Seven. There are two main sections in this chapter. Section 3.2 discusses the history and development of protected areas in Thailand. It introduces Thailand's biodiversity and discusses the importance of conservation. The development of the national park management system and co-management initiatives is then discussed, together with the links between tourism and conservation. Section 3.3 discusses the historical and current management of Northern Thailand's national parks and Indigenous hill tribe communities' livelihoods. This section also includes the characteristics of Indigenous hill tribe communities and the details of their agricultural practices and livelihood development.

3.2 The Development of Protected Areas in Thailand

Thailand is situated in the central mainland of Southeast Asia, with a total land area of 513,115 km^2. Thailand is bordered by four countries, namely Laos in the North-East, Myanmar in the North-West, Cambodia in the East, and Malaysia in the South, as illustrated in Figure 3.1 (CIA, 2015).

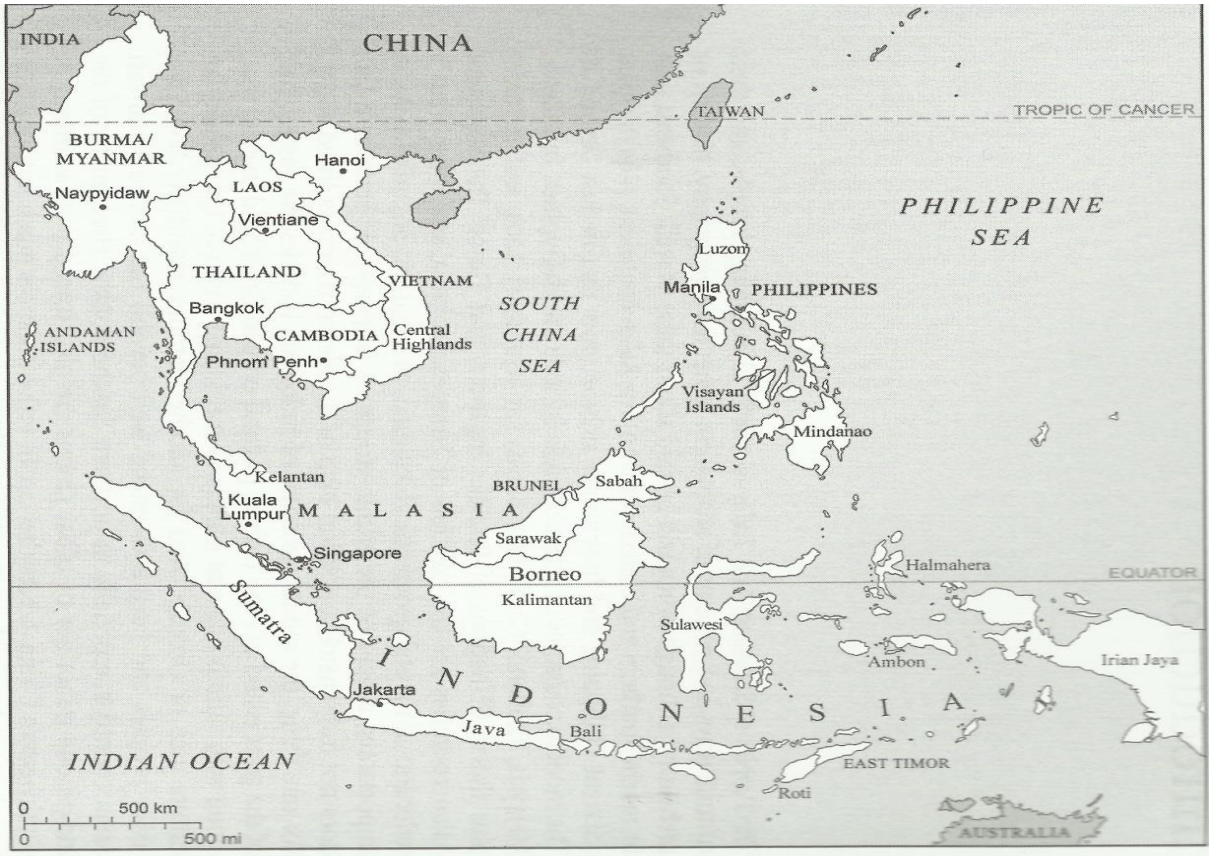

Figure 3.1 The Location of Thailand.
Source: Winzeler (2011, p. 2).

Figure 3.2 illustrates Thailand's terrestrial boundaries, which cover a total length of 5,673 kilometres. Thailand also has two coast lines, bordering the Andarman Sea on the West and the Gulf of Thailand on the East, which together cover 3,219 kilometres. Geographically, there are six regions in Thailand: Northern, Northeast, Central, Eastern, Western, and Southern regions. Within Thailand's bureaucratic system, the Western and Eastern regions are combined with the Central region for political and statistical purposes (CIA, 2015). Figure 3.2 also shows the provincial boundaries of Thailand's 76 provinces. Each province (*Jungwat*) is divided into districts (*Amphur*), and each district is further divided into sub-districts (*Tambon*), which comprise many villages (*Moo Baan* or *Baan*). The village is the smallest administrative level in Thailand. Each level has hierarchical governing systems.

Figure 3.2 Map of Thailand.
Source: University of Texas Libraries (2013).

3.2.1 Historical Background of Forestry and Natural Resource Management

Between the seventeenth and early nineteenth century, the King of Siam (the former name for Thailand) governed Thailand under an absolute monarchy system. The King granted the possession of land to Thai officers as part of their salary or as grants, based on their position and contribution to nation with good ethics (Pragtong & Thomas, 1990; Sato, 2000). As such, land ownership was the privilege of Thai officers. Other Thai citizens could stay within residential land under the supervision of certain Thai officials and and work for them such as,

gardening and cooking; some of them lived freely in forest areas (Pragtong & Thomas, 1990; Sato, 2000).

In the early 1850s, Thailand became more open for commercial trade with many European countries, and many foreigners worked together with Thai officials (Hirsch, 1990; Ingram, 1971; Lakanavichian, 2001). Although Thailand was never colonised by Europeans, Thailand's natural resource management and conservation practices gradually became influenced by Western approaches (Hirsch, 1990; Hongladarom, 2004; Lakanavichian, 2001). In the mid-1880s, two significant historical events influenced Thai natural resource management (Pragtong & Thomas, 1990; Sato, 2000). First, in 1855 the Thai government signed its first agreement with the British regarding trade concessions: the Bowring Treaty. This compelled the Thai government to trade openly with British and European countries, giving them concessions on natural resources, such as, teak timber and ores (Pragtong & Thomas, 1990; Sato, 2000). Second, the Thai government began to incorporate Western natural resource management approaches into its national conservation policies (Pragtong & Thomas, 1990; Sato, 2000).

Massive deforestation and a loss of wildlife habitats resulted from the interference of timber companies from England and other European countries, which over-exploited Thailand's forest areas as it exported timber (Pragtong & Thomas, 1990; Sato, 2000). To protect the remaining forest areas, the Thai government developed new natural resource management and conservation practices. In 1885, King Chulalongkorn went to England to learn forestry management, and employed a British forester named Herbert Slade to teach Thai governors about forestry and natural resource management (Hafner, 1990). In the following year, the Royal Forest Department (RFD) was established with the assistance of Slade (Hirsch, 1990; Sato, 2000; Wong, Delang, & Schmidt-Vogt, 2007). The establishment of the RFD was a significant milestone for forestry and natural resource management in Thailand (Emphandhu & Chettamart, 2003; Ghimire, 1994). Since then, Thai forestry management and natural resource conservation have been influenced by Western conservation practices (Pragtong & Thomas, 1990; Sutthisrisinn & Noochdumrong, 1998).

Initially, many villages were located in the mountain range of Khao Yai and its large mountainous forest. These forest areas were plagued with problems of vast areas of deforestation, shifting agriculture, and abandoned areas. In 1959, Field Marshall Sarit, the 11th Prime Minister of Thailand, and leader of one of Thailand's military governments, stated

that “Forests are significant natural resources and those who destroy the forests are the enemy who destroy the nation’s security” (Sarit, quoted in Luangaramsri, 2001, p.75). This statement reflected the military government’s forest policy and is considered to be the first announcement that the forest was national common property (Laungaramsri, 2002b; Vandergeest, 1996). Following this statement, the Thai government and the RFD implemented the Forest Act (1960) and the National Parks Act (1961) (Sutthisrisinn & Noochdumrong, 1998). The primary objective of both Acts was to protect the remaining forest areas, biodiversity, and wildlife habitats.

In 1961, the first national park in Thailand, Khao Yai National Park, was established. Initially, a traditional national park management approach was applied (Roth, 2004a; Wittayapak, 1996). This approach relocated people from the forest and limited their access to forest areas (Hirsch, 1990; Sato, 2000; Suwanmanee, 2009; Vandergeest, 1996). To enhance conservation management, the RFD also implemented the Wildlife Animals Reservation and Protection Act (1980), which included the Wild Elephant Protection Act (1960), in order to protect remaining wildlife in protected areas, including national parks and wildlife sanctuaries (Humphrey & Bain, 1990). The Thai government also signed CITES[3] which was ratified in 1983 (Arbhabhirama, 1988; Emphandhu & Chettamart, 2003; Fujita, 2003; Ghimire, 1994). In line with CITES, the RFD classified the Asian elephant, tiger, and hornbill as endangered species (Emphandhu & Chettamart, 2003; Ghimire, 1994).

However, since the mid-1900s, Britain and other European countries have exploited forest areas in Thailand as well as in neighbouring countries (Pragtong & Thomas, 1990; Sato, 2000). This exploitation increased the economic value of teak forests in Northern Thailand (Pragtong & Thomas, 1990; Sato, 2000), and the timber was exported to England and European countries as a major source of national income (Sutthisrisinn & Noochdumrong, 1998). Although the Thai government announced several Acts and signed many agreements, massive deforestation in Northern Thailand still resulted through unsustainable forestry and the mismanagement of national parks, including some commercial and illegal logging (Hirsch, 1990; Laungaramsri, 2002b; Vandergeest, 1996). This problem of deforestation created the devastating flood which occurred in the Northern, Central, and Southern regions of Thailand in 1988 (Delang, 2005; Grainger, 2004; Hares, 2009; Lombardini, 1994). As a result, the Thai government and the RFD implemented the National Logging Ban (1989) and

[3] CITES (The Convention on International Trade in Endanger Species) is an international agreement which seeks to regulate the trade of wildlife (Vance, 2011).

established additional national parks in Northern Thailand (Delang, 2005; Grainger, 2004; Hares, 2009; Lombardini, 1994; Dearden *et al.*, 1996; RFD, 2000).

3.2.2 Thailand's Fragile Biodiversity and the Need for Conservation

Many developing countries have experienced a massive loss of biodiversity because of wildlife habitat fragmentation and on-going environmental degradation. As a result, protected areas and national parks have been established to protect biodiversity, particularly in tropical forest areas of developing countries (Dearden, Bennett, & Johnston, 2005; Myers, 1994; Myers, Mittermeier, Mittermeier, Fonseca, & Kent, 2000; Zachos & Habel, 2011). Worldwide, biodiversity hotspots are at the forefront of conservation efforts to protect remaining flora and fauna biodiversity (Myers, 1994; Myers *et al.*, 2000; Zachos & Habel, 2011). In general, the definition of biodiversity hotspots refers to specific biogeographically distinct regions that contain over 0.5% of the world's flora within its boundaries (Brooks, 2002). Endangered species, as classified in the IUCN's red list, exist in many of the hotspots and are at high risk of extinction.

Thailand is one of South-East Asia's biodiversity hotspots, as illustrated in Figure 3.3. According to Thailand's biodiversity literature, it is home to approximately 7% of the world's flora and fauna (Luangjame, Dumrongthai, & Urasayanon, 1997; OEPP, 2000b; ONEP, 2006; Pooma *et al.*, 2005). The 12,253 identified endemic flora species represent approximately 80% of the total plant species in Thailand (OEPP, 2000b; ONEP, 2006; Santisuk, Chayamarit, Pooma, & Suddee, 2006). There are an estimated 87,500 fauna species in Thailand, but only 12,777 species have been identified (4,072 vertebrates and 8,705 invertebrates) (OEPP, 2000b; ONEP, 2006). In 2006, the Flora and Fauna of Thailand Project identified 120 endemic plant species and 141 endemic vertebrates, including 6 mammals, 67 birds, 29 fish, 31 reptiles, and 8 amphibians (ONEP, 2006).

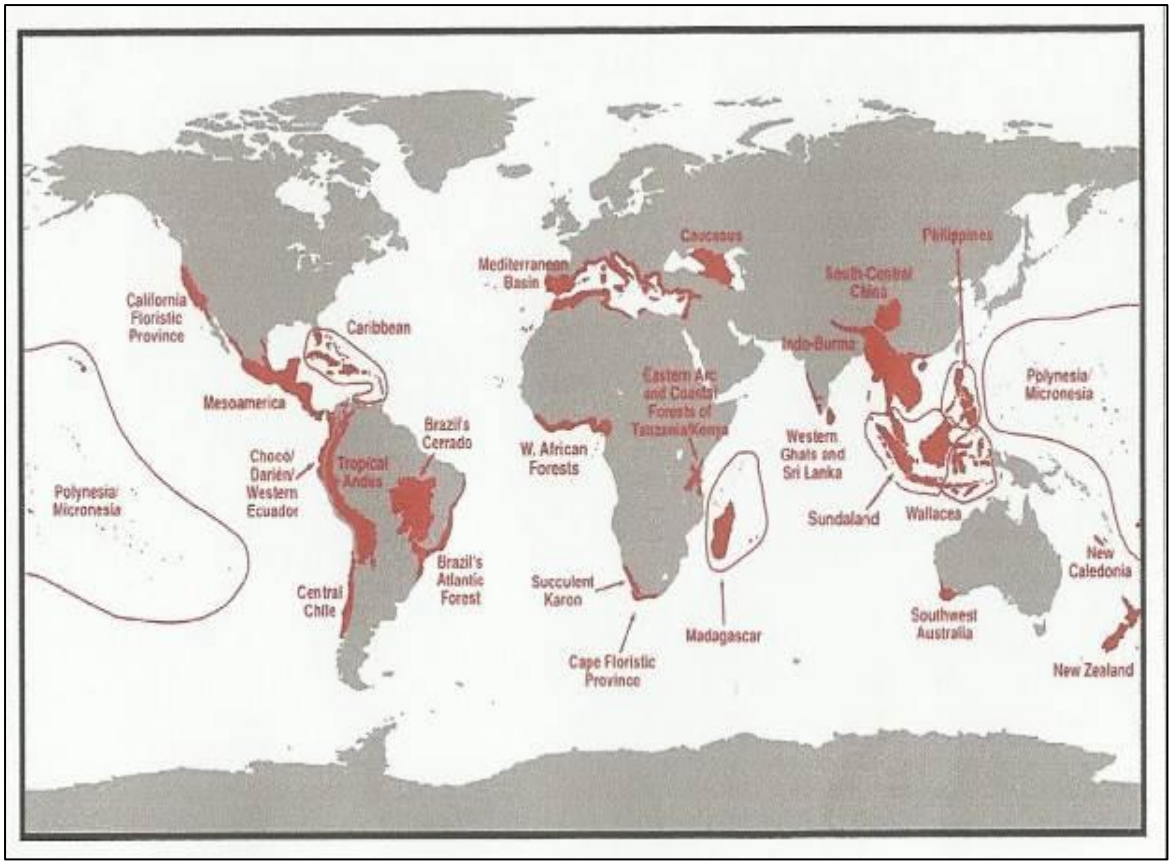

Figure 3.3 Map of Global Biodiversity Hotspots.
Source: Myers *et al.* (2000, p.853).

In Thailand, there has been a massive loss of forest areas, biodiversity, and wildlife habitats due to continuous deforestation (Emphandhu & Chettamart, 2003; Ghimire, 1994; Grainger, 2004; Gray *et al.*, 1994). Thailand's forest areas have decreased from an estimated area of 53% (273,508 km^2) of land in 1961 to 25% (131,485 km^2) of land in 1995 because of on-going illegal logging, extensive agriculture, mining, and commercial plantations (OEPP, 2000a; RFD, 1997, 2000, 2003; Sutat, 2003). As a result, approximately 457 plant and 554 animal species in Thailand have become either rare or endangered (OEPP, 2000b; ONEP, 2006). For example, the Sumatran rhinoceros, which was once common in many parts of the country is now rarely seen in the wild (Emphandhu & Chettamart, 2003; ICEM, 2003b). Other flagship species, such as elephants, tigers, leopards, and a variety of primates, are also threatened (ICEM, 2003a, 2003b; IUCN, 2010).

For more than half a century, the RFD has continued to establish many national parks and other protected areas in an effort to reduce further deforestation and biodiversity loss. The Thai government has also launched several national development plans, natural resource

management schemes, and sustainable development strategies, with implications for national park management (Dearden, 1997, 2002; Grainger, 2004; Gray *et al.*, 1994). The primary approach for biodiversity protection and conservation efforts in Thailand has been the establishment of national parks, protected areas, buffer zones and biodiversity corridors. There are currently 127 national parks covering 62,198.86 km^2 (approximately 12% of Thailand's land area) (DNP, 2011, 2012, 2014). Altogether there are over 400 protected areas currently gazetted, covering 99,128.23 km^2 (approximately 19% of Thailand's land area) (DNP, 2011, 2012, 2014).

In spite of the significant biodiversity protection and conservation efforts in Thailand's national parks, engagement in agricultural production adjacent to protected areas and the expansion of agricultural areas by local and hill tribe communities does contribute to ongoing deforestation (Sims, 2010; M. Tomforde, 2003). Moreover, increasing population pressures, rural poverty and the rapid economic development during recent decades add pressure to biodiversity both inside, and adjacent to, the national parks and protected areas (Sims, 2010; M. Tomforde, 2003). With the achievement of effective conservation goals in mind, the Thai government has launched several national development plans, including national conservation policies for conserving forests and biodiversity (Dearden, 1997, 2002; Grainger, 2004; Gray *et al.*, 1994). The Thai government plans to increase protected areas and national parks to cover approximately 25% of the land area within the next decade (NESDB, 2012-2016).

A combination of population growth, rural poverty and development pressures have gradually put critical pressure on the availability of natural resources and caused significant negative impacts to the country's biodiversity. The Thai government has tried to restructure the governance of natural resource management in order to enhance biodiversity conservation. Recently, national park management conservation efforts have aimed at decreasing threats to biodiversity from unsustainable agricultural, tourism and land conservation practices. However, these efforts must be balanced with the need to enhance opportunities for local and Indigenous hill tribe communities' livelihoods. The key challenge to national park management lies in establishing consistency in natural resource management across several governmental institutions in an effort to achieve effective conservation goals. The next section will provide background to the governance structure of Thailand's natural resource management, including an explanation of the links between tourism development and national park management.

3.2.3 The Development of Thailand's Natural Resource Management System

The implementation of conservation policies and Acts has also led to changes in the Indigenous hill tribe people's livelihoods in terms of the constraints and opportunities for protecting natural resources, through the development of community-based conservation. Conservation policies and Acts, such as, the Forest Act (1941), National Park Act (1961), National Forest Reserve Act (1964), and Community Forest Act (2007) provide the opportunity for communities to protect community forest and traditional rituals involving sacred forest areas (Forsyth & Walker, 2008). The Community Forest Act (2007) supported existing community-based natural resource management, and affirmed the decentralisation of natural resource governance to local communities. The Thai constitution (2007) also emphasises community rights and empowerment in relation to community-based natural resource management.

Discrimination and marginalisation are two of the challenges facing Indigenous hill tribe people and their livelihoods. Historically, the growth of opium by these communities has led to the perception of an ongoing drug trade, and issues around discrimination, poverty, land rights and citizenship continue to be a challenge for the Indigenous hill tribe people in Northern Thailand (Forsyth & Walker, 2008; Hares, 2009). This marginalisation and discrimination has resulted in the Network of Indigenous Peoples of Thailand (NIPT) campaigning for acceptance and equal rights since 2007. Consequently, the Council of Indigenous Peoples in Thailand (CIPT) was also established. At its First National Assembly in 2014, the CIPT formally approved its Constitution, which sought to resolve economic, social, political, educational, environmental, and human rights issues (Cultural Survival, Network of Indigenous Peoples in Thailand & Asia Indigenous People Pact, 2015). At its Second Assembly in 2015, 38 Indigenous groups were represented, and 2 Indigenous councils at the local level were established (Cultural Survival, and the Network of Indigenous Peoples in Thailand & Asia Indigenous Peoples Pact, 2015). In 2014, the Interim Constitution of Thailand was reviewed. At this time, Indigenous people lobbied for legislation to be incorporated into the Interim Constitution that safeguarded the rights of the Indigenous people. However, to date, no legislation of this nature appears to have been approved (Cultural Survival, and the Network of Indigenous Peoples in Thailand & the Asia Indigenous Peoples Pact, 2015).

Forestry and national park management systems in Thailand have been evolving for over half a century. From the early 1960s until 2001, the main task of the RFD was to establish and regulate protected areas and national parks. The RFD was responsible for natural resource management, conservation initiatives, reforestation projects, and forestry research (Emphandhu & Chettamart, 2003; Forsyth & Walker, 2008; Fujita, 2003; Ghimire, 1994). To improve the effectiveness of natural resource management, in 2002 the Thai Government decided to restructure institutional arrangements. Thailand's new natural resource management system is illustrated in Figure 3.4. Under this new structure, the Ministry of Natural Resources and Environment (MONRE) supervised both the RFD and the DNP.

The responsibility for protected areas and national parks, including conservation initiatives such as reforestation, fire management, watershed management, and biodiversity protection, was transferred to the Department of National Parks Wildlife and Plant Conservation (DNP) (DNP, 2003; Emphandhu & Chettamart, 2003). Under this new system, the RFD was transferred from the Ministry of Agriculture and Cooperatives to the Ministry of Natural Resources and Environment, but remains responsible for production forests, especially plantation forests (DNP, 2003; Emphandhu & Chettamart, 2003).

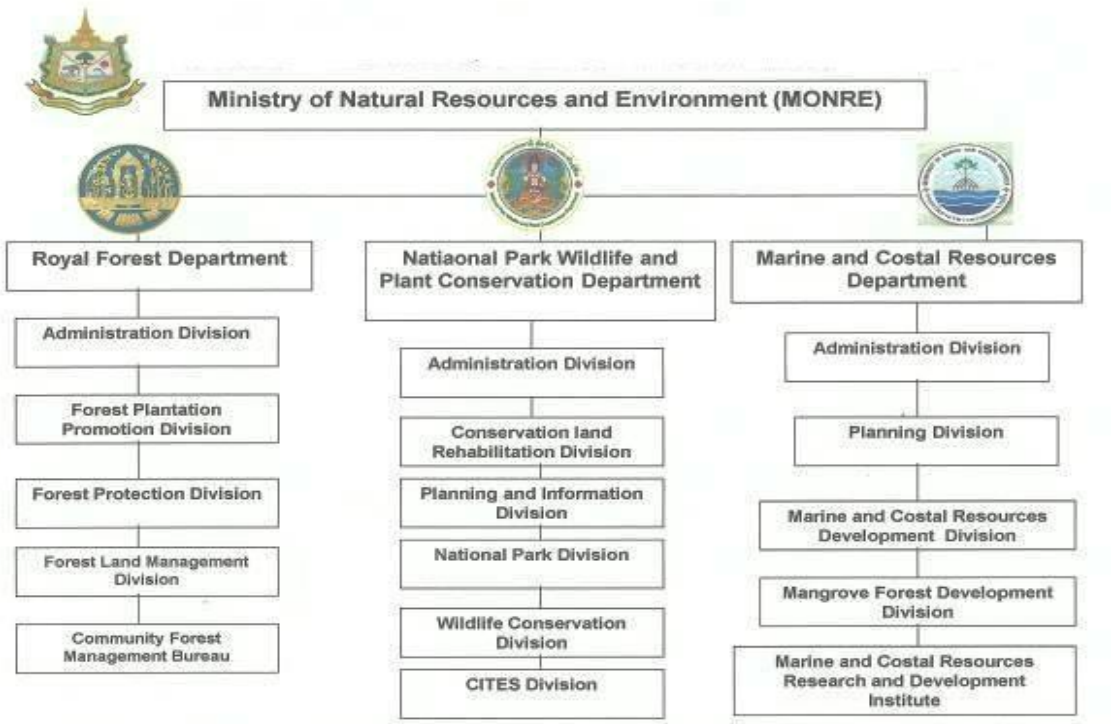

Figure 3.4 Institutional System of Natural Resource Management in Thailand.
Source: The DNP (2003).

The RFD also has responsibility for community forest management, aiming to develop sustainable use and community-based conservation practices within the natural forests and plantations (DNP, 2003; Emphandhu & Chettamart, 2003). Maintenance of the mangrove forests and coastal areas of Thailand's boundaries is the responsibility of a new department, the Department of Marine and Coastal Resources (MCRD). Emphandhu and Chettamart (2003) summarise Thailand's protected area categories and their management objectives in relation to the IUCN's categories as stated in IUCN-WCMC (1994) (see Table 3.1).

Table 3.1 Management Objectives of Thailand's Protected Areas.
Source: Emphandhu & Chettamart (2003)

Management objectives	**Wildlife sanctuary (IUCN Ia)**	**Watershed area Class I (IUCN Ib)**	**National parks (IUCN II)**	**Forest parks (IUCN III)**	**Non-hunting areas and mangrove conservation areas (IUCN VI)**
1. Scientific research	1	3	2	2	2
2.Wilderness protection	2	1	2	3	2
3.Preservation of species and genetic diversity	1	2	1	1	1
4. Maintenance of environmental services	2	1	1	--	1
5. Protection of specific natural and cultural features	--	--	2	1	3
6. Tourism and recreation	--	2	1	1	3
7.Environmental education	--	--	2	2	3
8. Sustainable use of natural resources	--	3	3	--	1
9.Maintenance of cultural and traditional attributes	--	--	3	--	3

Note: 1 = primary objective; 2 = secondary objective; 3 = potentially applicable objective; and -- = not applicable.

3.2.4 The National Park Management System and Development Trends

According to Borrini-Feyerabend (1996), the development of management in national parks around the world has gradually evolved through three different stages of management, as shown in Figure 3.5. The first stage is recognised as traditional 'government management', a top-down approach, which gives few rights to any Indigenous communities to manage natural resources in protected areas. The second stage follows an increasing global recognition of Indigenous people's rights, and provides a more inclusive model of 'co-management' whereby the government and Indigenous communities work together in natural resource management. More recently, the third stage has seen the contemporary management of national parks in many countries adopt a bottom-up approach, with greater community-based conservation. This enables local and Indigenous communities to set up and manage their own conservation initiatives to manage natural resources.

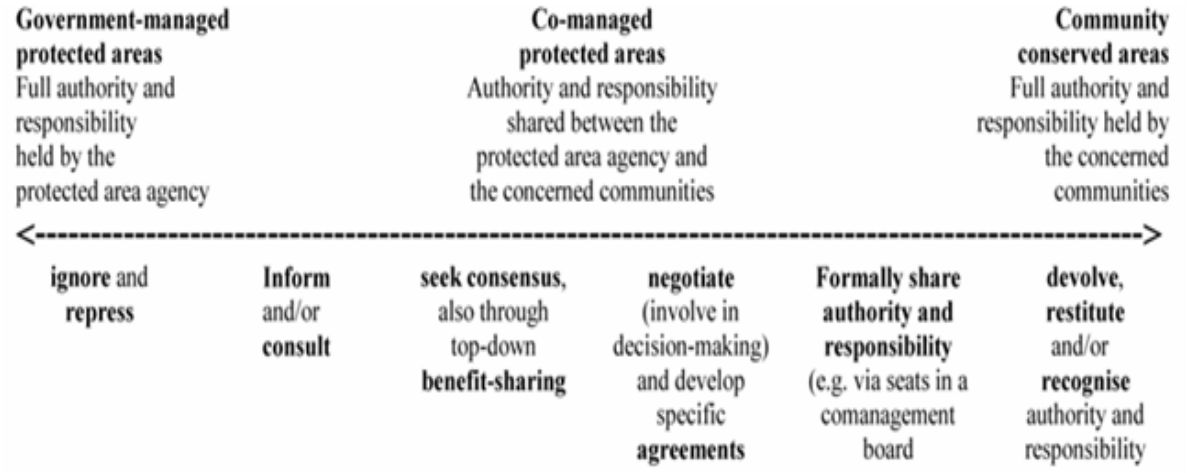

Figure 3.5 The Continuum of Protected Areas and National Park Management.
Source: Borrini-Feyerabend (1996, p. 17).

Over the past few decades, the global development trend of national park management has shifted from 'top-down' to 'bottom-up' (or participatory) approaches, enhancing the effectiveness of natural resource management practices (Dudley *et al.*, 2010; Stolton & Dudley, 2010; P. K. Walker *et al.*, 2010). Participatory approaches emphasise the role of local and Indigenous people in collaborative natural resource management and policy-making processes (Borrini-Feyerabend *et al.*, 2013; Dudley, 2008; Dudley *et al.*, 2010). The empowerment of local and Indigenous communities in conservation initiatives is important

for enhancing the development of community-based natural resource management (CBNRM), and co-management initiatives which support the improvement of local and Indigenous people's livelihoods, socio-economic well-being and ecological sustainability (Borrini-Feyerabend *et al.*, 2013; P. K. Walker *et al.*, 2010).

For example, the Ugandan government has launched strategic plans to develop co-management initiatives with a focus on the equity of benefit sharing (for example, tourism fees). This also benefits local and Indigenous communities who obtain harvesting licences to access national park areas and has contributed to developing strong, reciprocal relationships between national park officials and Indigenous communities (Ahebwa, Van der Duim, & Sandbrook, 2012; Infield & Adams, 1999). The mutual benefits of collaboration between Indigenous communities and national institutions are a critical factor in achieving effective sustainable development and natural resource management (Berkes, 2009). However, developing mutual relationships can be challenging due to the conflicting goals and priorities of stakeholders (Anan, 1998; Brown, 2002; Fujita, 2003; Ghimire, 1994; Hvenegaard & Dearden, 1998b; ICEM, 2003a).

It is now widely recognised that local participation, an understanding of local, Indigenous people's perceptions, and traditional ecological knowledge are crucial to achieving sustainable park management through successful co-management (Berkes, 2004; Brosius, Tsing, & Zerner, 1998; Foucat, 2002; Laverack & Thangphet, 2009). In South-East Asia, many countries have employed co-management initiatives (Barber, Miller, & Boness, 2004). One example of a successful co-management initiative is the Indonesian Government's establishment of Bunaken National Park (BNP) and the setting-up of the BNP Management Advisory Broad (DPTNB). This is a multi-stakeholders board, representing several intuitions and organisations. The DPTNB has implemented a twenty-five-year plan which encompasses 'shared authority and responsibility' as a pathway to enhance the effectiveness of co-management of the park (Erdmann *et al.*, 2004). It could be argued that this initiative sits in the middle part of the continuum of protected area management as previously illustrated in Figure 3.5.

The initial stage of Thailand's co-management initiatives sits between the 'ignore and repress' and 'inform and/or consult' phases on the continuum depicted in Figure 3.5. Between 2003 and 2008 the Thai government, in collaboration with the Danish International

Development Agency[4] (DANIDA), initiated JOMPA (the Joint Management of Protected Areas) in Thailand's national parks (IMPECT & FPP, 2006; Parr *et al.*, 2008). Initially, DANIDA provided approximately 53 million DKK of funding in support of JOMPA as part of the Thai-Danish Programme for Cooperation in the Environment (IMPECT & FPP, 2006; Parr *et al.*, 2008). The focus of DANIDA was on promoting participatory approaches to the management of protected areas and national parks in Thailand to enhance both biodiversity conservation and the sustainable livelihoods of its local and Indigenous communities (IMPECTN & FPP, 2006; Parr *et al.*, 2008).

However, like other co-management initiatives around the world (Parr *et al.*, 2008), Thailand has experienced challenges in implementing this new strategy. Yet, the adoption of JOMPA into Thailand's national park management has empowered local and Indigenous communities in developing and engaging in natural resource management. The development of JOMPA has facilitated national park officials and policy-makers in establishing a participatory national park management approach that enhances the participation of local and Indigenous people in conservation activities (Castro & Nielsen, 2001; Johnson & Forsyth, 2002; Neef *et al.*, 2003; Parr *et al.*, 2008). This development has also enabled policy-makers to develop strategic plans to address the loss of forest areas and biodiversity, whilst also developing sustainable livelihood practices among the local and hill tribe communities residing in, and adjacent to, the national parks.

The management of Thailand's national parks has been influenced by the traditional western approach, which emphasised the separation of people and protected areas. This approach has contributed to long-term conflict over land ownership and the rights of communities. The process of policy-making in Thailand is still characterised by a top-down (or centralised) approach, and Indigenous communities still lack opportunities to participate in decisions impacting their traditional natural resources and livelihoods (IMPECT & FPP, 2006; Johnson & Forsyth, 2002). This remains an obstacle in the development of genuine co-management, and has led to negative impacts on the local and hill tribe communities' livelihoods, and unsustainable conservation management (IMPECT & FPP, 2006). To address these problems, community-based management has been prioritised in recent conservation policies and incorporated into national plans (NESDB, 2007-2011, 2012-2016; OEPP, 2000b). In 2012,

[4] DANIDA is an organisation supervised by the Ministry of Foreign Affairs of Denmark. This organisation provides funds to assist developing countries improve quality of life, and for the collaboration of natural resource management and environment protection (Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT) & Forest Peoples Programme (FPP), 2006; Parr *et al.*, 2008).

the Thai Government adopted a co-management strategy, originally developed in New Zealand, called the 'Whakatane Mechanism'. This mechanism emphasises the importance of Indigenous communities and their role in decision-making in order to improve natural resource management practices (FPP, 2011).

3.2.5 The Links between Sustainable Tourism Development and Conservation

Around the world, tourism has been developed as a strategic way to accelerate economic growth and boost domestic and international investment (Archer, 1980; Ayres, 2000; De Kadt, 1979; Hunt, 2011). In Thailand, the purpose of national parks is not only to protect biodiversity but also to provide socio-economic benefits to Thai society through the development of tourism (Chaisawat, 2005; Clewley, 1998; Cochrane & James, 2007).

The Thai Government created several strategic plans for sustainable tourism development to promote recovery from the Asian financial crisis in 1997. These proved successful, resulting in significant economic growth and poverty reduction (Chaisawat, 2005; Chaisawat & Hsu, 2005). Many of Thailand's national parks have been promoted as premier nature-based tourism destinations by the Tourism Authority of Thailand (TAT), marketed through the '1998 and 2000 Visit National Parks Year', 'Amazing Thailand', and 'Unseen Thailand' campaigns (Chaisawat, 2005; Chaisawat & Hsu, 2005). As a result, Thailand's economy has gradually recovered through tourism development, which has also supported domestic and international investment, job creation, and increased local and national income (E. Cohen *et al.*, 2001; Emphandhu & Chettamart, 2003; Thiro *et al.*, 2002; Williams *et al.*, 2009).

However, many of Thailand's national parks have been confronted with the rapidly expanding infrastructure, which has been established in response to economic growth and to serve mass tourism (Cropper *et al.*, 2001; ICEM, 2003b; Sims, 2010). This expansion has subsequently caused further deforestation and has led to the loss of biodiversity and wildlife habitats (Emphandhu & Chettamart, 2003; Sims, 2010). The problem of deforestation remains largely unsolved because of many factors, including the construction of infrastructure to serve mass tourism, the expansion of agricultural areas and illegal logging (Emphandhu & Chettamart, 2003; Sims, 2010). Recognition of the causes of deforestation has resulted in the development of sustainable tourism such as community-based ecotourism which seeks to minimise the ecological impact of tourism to ensure long-term sustainable development in national parks (Tourism Authority of Thailand (TAT), 1996, 1997, 2009).

Community based eco-tourism (CBE) is considered an alternative livelihood for the communities that reside within, and adjacent to, the national parks. The development of CBE can contribute to the creation and maintenance of economic opportunities, enhanced quality of life and the protection of cultural, historic and natural heritage (Eagles & McCool, 2002). Local communities can provide many of the goods and services sought by visitors, and can, if integrated with the management of the natural areas, protect the natural resources of the protected areas (Moisey, 2002). As such, CBE within the national parks can play an important role in enhancing local prosperity, as it generates supplementary income and expands job opportunities. However, the success of CBE ventures depends on several factors. Effective stakeholder participation is essential. CBE has been developed to reduce environmental impacts and is designed to support natural conservation. Benefits derived from CBE contribute to the soci-economic wellbeing of local communities (Cropper *et al.*, 2001; Emphandhu & Chettamart, 2003).

Sustainability has been acknowledged as a fundamental principle in national park tourism management (Churugsa, McIntosh, & Simmons, 2007; Kontogeorgopoulos, 2000). Tourism management guidelines are sometimes integrated into park management plans but are also sometimes formulated separately (Churugsa *et al.*, 2007; Kontogeorgopoulos, 2000). The main idea of sustainable tourism is that the natural and cultural environments of the national parks are most important and must not be put at risk, since protected area tourism depends on the high quality of the natural environment (Churugsa *et al.*, 2007; Kontogeorgopoulos, 2000). National park management must protect the values for which the area was originally established and actively manage tourism and tourists, sharing responsibility for management with tourism operatives, local communities and visitors, and providing potential economic opportunities for tourism. The link between national parks, tourism, and local economies is considered a central tenet of strategic planning to ensure sustainable development within Thailand's national parks (Dearden, 1997; Sims, 2010).

3.3 Background of Northern Thailand's National Parks

Northern Thailand covers an area of approximately 170,000 km^2 and shares its borders with Laos in the North and Myanmar in the West. The natural landscape of Northern Thailand is dominated by forested mountainous and highland areas, which are characterised by high biodiversity and provide important wildlife habitats (Hvenegaard & Dearden, 1998b). Approximately 10% of the total area of Northern Thailand is categorised as lowland areas

(Emphandhu & Chettamart, 2003). Thirty-four national parks are located in Northern Thailand. Together they cover over 15% of the total land area (DNP, 2014).

The management of Northern Thailand's national parks has been critiqued by several studies, which have highlighted conflict between national park officials and local and hill tribe communities over access to natural resources and management priorities. Although land use restrictions and land reform processes have reduced deforestation to some extent, ongoing deforestation and agricultural land expansion in Northern Thailand's national parks are of concern and are seen as a failure of national park management (Dearden, 1997; Nepal, 2002; Sims, 2010; Cropper *et al.*, 2001; Delang, 2002, 2005; RFD, 1997). Many studies have also discussed the impacts of rapid population growth and rural poverty, both of which have been identified as contributing to further deforestation (Cropper *et al.*, 2001; Delang, 2002, 2005; RFD, 1997). Deforestation not only leads to further environmental degradation and wildlife habitat fragmentation, but also affects food security due to the loss of viable agro-ecosystems among the Indigenous hill tribe communities (Delang, 2002, 2005; Fisher & Hirsch, 2008). Although the rate of deforestation has decreased since the establishment of the national parks, the agricultural practices of the local and hill tribe communities are still blamed as the main cause of deforestation and environmental degradation (Hares, 2009).

3.3.1 Overview of the Indigenous Hill Tribe Communities in Northern Thailand

Within the mountainouse areas of Northern Thailand, Indigenous hill tribe communities are recognised as "*Chum Chon Chao Khao*[5]" (in Thai), which means 'communities living within forested mountainous and other highland areas' (Buergin, 2000; McKinnon, 1998; Rajani, 2002). The protected forest areas and national parks in Northern Thailand are home to a diverse range of Indigenous hill tribe communities residing within varied geographical landscapes. The Indigenous hill tribe tribes are also characterised by different cultures, beliefs, and historical backgrounds.

Based on literature, the Indigenous hill tribe communities of Northern Thailand mainly migrated from the Southern part of China, and travelled through Myanmar, Laos, Vietnam, before settling in Thailand in the 18th to mid 19th centuries (Agar, 2006; Buergin, 2000; Cummings, 2002, 2005; McKinnon, 1998; Rajani, 2002). The hill tribe communities comprise of several ethnic groups, including the Kariang (Kariang), Hmong, Lu Mien (*Yao*),

[5] In Thai, *Chum Chon* means communities, *Chao* means group of people and *Khao* means Mountain.

Akha, Lahu, Lua (*Lawa*), H'tin (*Kachin*) and Mlabi (Highland Development Project (HDP), 2009; Howard, 2008). Henceforth, each cultural group will be referred to by their Thai name.

These Indigenous hill tribe communities have their own cultures, languages, customs, and styles of dress, and belief systems, which are distinct from the majority of Thai people who are lowland settlers (IMPECT & FPP, 2006). The seven hill tribe communities are highly heterogeneous but do share some similarities including their common ancestral homeland and shared agricultural practices (Buergin, 2000; McKinnon, 1998). They have unique systems of natural resource management that are centred on their traditional knowledge, which has been passed down from one generation to the next. There are many customs and rituals that govern their customary use of natural resources, which are not known or understood by the Thai Government or the public (Buergin, 2000; McKinnon, 1998; Rajani, 2002).

In total, the population of the Indigenous hill tribe communities is approximately 914,755 people (as summarised in Table 3.2), which makes them an ethnic minority relative to the total Thai population of approximately 67,741,401 in 2014 (CIA, 2014). However, accurately estimating the hill tribe population is difficult due to many factors, including their lifestyles and their outward-migration during the non-harvesting season (HDP, 2009; Howard, 2008).

Table 3.2 Thailand's Hill Tribe Populations.
Source: Social Development Centre (2008).

Ethnicity of Indigenous Hill Tribe Communities	Approximate Population
Kariang	438,450
Hmong	151,080
Lahu	102,371
Akha	65,826
Yao	44,017
H' Tin	42,782
Lisu	37,916
Lawa	21,794
Khamu	10,519
Total Population	914, 755

In Northern Thailand, the majority of hill tribe people are Kariang and Hmong, who together make up almost 80% of the Indigenous population (HDP, 2009; Howard, 2008). These groups mostly reside in forested mountain areas, particularly within the national parks (IMPECTN & FPP, 2006). The Kariang people are regarded as the first inhabitants of Northern Thailand and are the largest of Thailand's upland ethnic groups (McKinnon, 1998). The Kariang people comprise of four groups as follows: 1) the Skaw Karen (Pga k'nyau); 2) the Pwo Karen (*Pa-long*); 3) the B'ghwe Karen (*Ka-ya*); and 4) the Tawng Ou Karen (*Pa-O*). Some hill tribe groups, such as, the Kariang and Lawa, have lived in Northern Thailand for centuries, while other groups, such as, the Hmong, Akha, Yao/Mien, Lahu, Lisu, Khamu and H'tin are more recent arrivals, settling in Thailand between 1890 and 1974 (Tribal Research Institute (TRI), 2007).

Based on the recent literature, the hill tribe communities are mainly scattered in the 20 provinces of Northern and North-West Thailand. The highest proportion of the hill tribe population can be found in Chiang Mai province (approximately 25.5% of this population group). Mae Hong Son province has the highest ratio of the total hill tribe population to Thai nationals (53%), Tak province is 22%, and Nan and Chiang Mai 13% and 11% respectively (TRI, 2007).

The Kariang and Hmong also form the majority hill tribe people residing within the national parks in Chiang Mai province in Northern Thailand (Dearden *et al.*, 1996). These two groups tend to live at different altitudes, as illustrated in Figure 3.6 (Forsyth & Walker, 2008). The Hmong people typically settle at high altitude areas, approximately 1,000 to 1,600m above sea level (ASL) (Forsyth & Walker, 2008). This area is covered by mixed deciduous and hill evergreen forest (Maxwell & Elliott, 2001). The settlement areas of the Kariang are typically located at the middle altitude areas, approximately 600 to 1,000m ASL (Forsyth & Walker, 2008). This area is covered by mixed deciduous forest (Maxwell & Elliott, 2001). The settlement area of Northern Thai people is located in the flat areas (or lowland areas) below 600m ASL (Forsyth & Walker, 2008; ICRAF, 2001). Figure 3.6 also shows the variety agricultural practices of the Indigenous hill tribe communities in Northern Thailand depending on ethnicity and elevation (Kunstadter, Chapman, & Sabhasri, 1978).

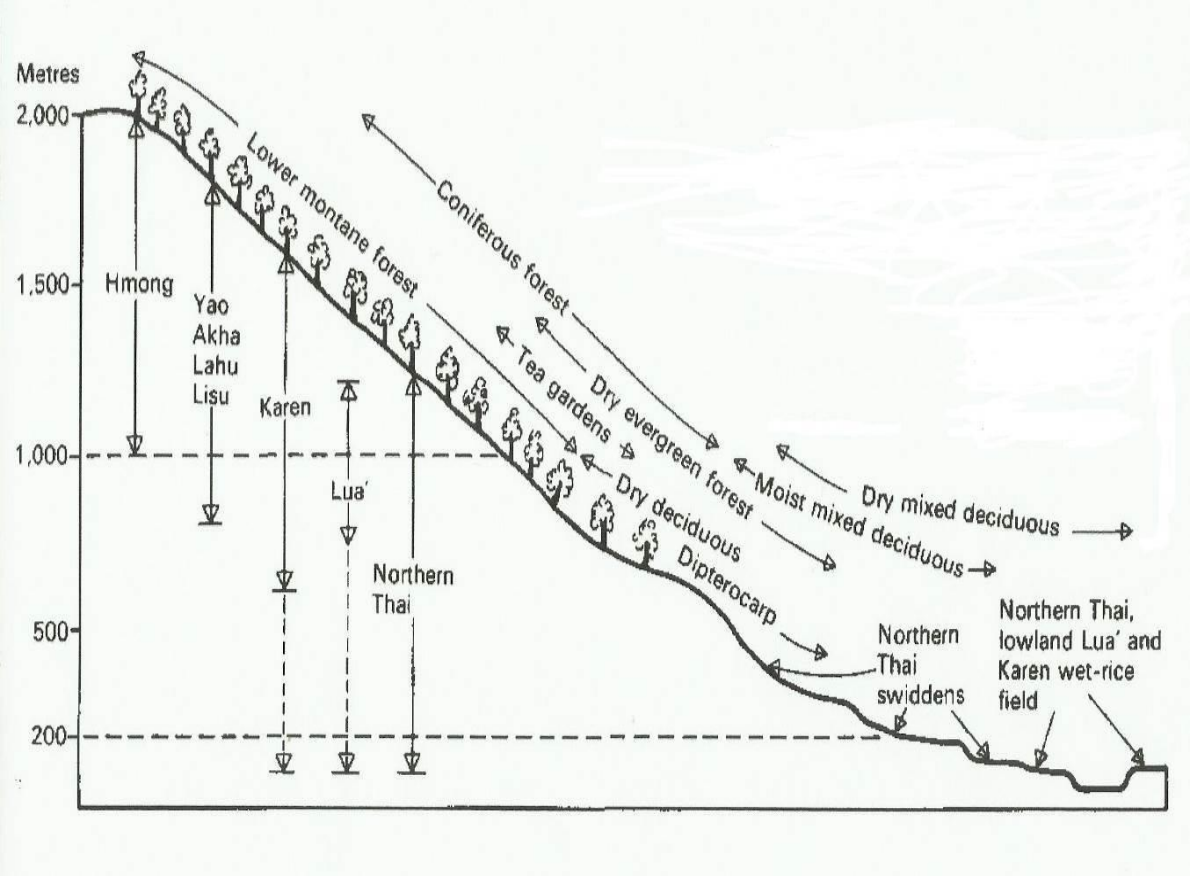

Figure 3.6 The Relationship between Settlement Areas and Agricultural Practices.
Source: Kunstadter *et al.* (1978, p.8).

In general, agriculture provides the main source of livelihood and household incomes for the Kariang and Hmong peoples. Traditionally, their agriculture is called upland agriculture, and is based on the slash-and-burn method. Kunstadter and Chapman (1987) explain that the traditional agricultural practices in upland areas of Northern Thailand can be categorised into four systems based on periods of a rotational cycle. These four systems are: 1) short cultivation with a long fallow period for the Lawa[6] and Kariang; 2) long cultivation together with a very long fallow period (more than 7 years) for the Hmong; 3) short cultivation with a short fallow period (no longer than one year) typically practised by the Northern Thai people; and 4) permanent cultivation and tree crops, which are used by all ethnic groups. However, variation occurs within these classes, and as much variation may exist within ethnic groups as between them (SchmidtVogt, 1999).

[6] Lawa people are one of smaller ethnic groups that live within the upland areas and some protected areas of Northern Thailand.

There are various classes of upland agriculture in Northern Thailand based on different classifying approaches. One example, SchmidtVogt (1999, p.77-79) uses a slightly different approach to classifying the upland agriculture practices, characterising it as "swidden farming[7]", which he divides into three systems based on ethnic groups as follows: 1) swidden farming of the Northern Thai (*Khon muang* in Thai) commonly located in the foothill zone; 2) swidden farming by long established upland minorities (Lawa, H'tin, Khamu, Kariang) in the middle altitudes at 600-1,000m ASL; and 3) swiddening by the more recently established upland minorities (Hmong, Akha, Lahu, Lisu) at the higher altitudes of 1,000m ASL and above. In practice, different types of swiddens can be found alongside each other; thus, the farming system is not only an ecological choice depending on resource availability but is also affected by cultural traditions. However, since the establishment of national parks in Northern Thailand, these upland agriculture practices have changed markedly as a result of land use regulations and zoning systems within, and adjacent to, the national parks.

Forsyth and Walker (2008) highlight how the different hill tribe communities and their livelihood practices are viewed in very different ways. The Kariang are seen as 'forest guardians'. They are afforded the privileged status of Indigenous people, acknowledged as having a strong background in sustainable natural resource management, and recognised as employing practices that protect the environment (Burergin, 2003; Forsyth & Walker, 2008; Santasombat, 2004; Walker, 2001). In contrast, the Hmong have been typically viewed as 'forest destroyers', and are considered by some Thai as illegal immigrants and drug traffickers (Buergin, 2003; Forsyth & Walker 2008; Siriphon, 2006; Tomforde, 2003). For example, Ganjanapan (2000, p. 173) characterised the Hmong as forest destroyers who "are not likely to preserve the forest areas where they temporarily live". The Hmong people are considered by many as non-Indigenous people with inadequate environmental management practices (Delang, 2002; Geddes, 1976). Although, current Homng communities did not cultivated the opium as in the past, they still faced the negative views from Thai society relating to drug trafficking and their slash-and-burn agriculture, which are against national laws and national park regulations (Renard, 1994; Siriphon, 2006).

[7] Swidden/swiddening is used here as a general term for various agricultural systems utilising slash-and-burn techniques, whether rotational or shifting. Rotational slash-and-burn or just rotational cultivation refers to a farming system in which cultivation is rotated within the same fields in a cycle of varying length. Shifting cultivation is used to describe a farming system in which farmers do not necessarily return to the same fields but rather move on to new sites instead.

The slash-and-burn cultivation undertaken by the Hmong people has been regarded as a primary example of an environmentally destructive agricultural practice (Forsyth & Walker, 2008). However, the slash-and-burn cultivation or shifting cultivation of the Hmong people is a traditional farming system based on field rotation in order to accumulate biomass in the topsoil during a very long fallow period before replanting during the next cycle (Cairns, 2015; IMPECT & FPP, 2006; Siriphon, 2006; Vandergeest, 2003).

Forsyth and Walker (2008) argue that there are complex relationships between the Indigenous hill tribe communities and the land on which they live, and that the terms 'forest guardian' and 'forest destroyer' are based on a misunderstanding of Indigenous livelihoods. They highlight that the agricultural practices of Indigenous people are not always the cause of environmental problems (Forsyth and Walker, 2008). Thus, a sound understanding of the dynamics and causes of environmental changes is crucial. Misunderstandings around the causes of environmental problems may lead to further conflicts between national park officials and Indigenous hill tribe communities, particularly in relation to natural resource use (Delang, 2002; IMPECT & FPP, 2006; M. Tomforde, 2003).

3.3.2 The Development of Conservation Policies in Northern Thailand's National Parks

The expansion of the national parks in Northern Thailand has been linked to national conservation strategies and land use management practices (Vandergeest, 1996, 1999). The RFD prohibited access to the protected forest areas and limited the size of Indigenous communities' areas within the national parks and forest reserve areas. The Thai Government also developed several strategies to enhance sustainable development and efficient natural resource management, as stated in the seventh National Economic and Social Development Plan (1991-1996). This plan was an important milestone in rural development and collaborative natural resource management in Thailand as illustrated in Figure 3.7 which presents a timeline of key events in the development of Northern Thailand's national park management.

The implementation of the Thai Constitution (1997) markedly changed the traditional management system of Northern Thailand national parks towards a more participatory approach (ICEM, 2003a, 2003b). Under the Thai Constitution which was most recently amended in 2007, the Thai government has delegated natural resource management authority to local government actors. It has also promoted positive outcomes for rural people's livelihoods and development, particularly through the Decentralisation Promotion Act of 1999 (Charas & Weist, 2010; Nagai, Funantsu, & Kagoya, 2008; Pragtong, 2000).

The new Thai Constitution also highlights the importance of local and Indigenous communities' rights, particularly in collaborative natural resource management and conservation activities (ICEM, 2003a, 2003b). The concept of environmental integrity has also become an integral part of national park management and environmental planning in Thailand (Emphandhu & Chettamart, 2003; Nootong, 1999). Consideration of environmental integrity must be promoted through the development of good governance in natural resource management both in terms of social justice and environmental protection (Pahl-Wostl, 2007).

Since the establishment of Northern Thailand's national parks, the Royal Project Foundation (RPF) has facilitated local and hill tribe communities in developing their livelihoods, and provides an education programme about alternative livelihood strategies to increase household income. The RPF actively works with government departments and NGOs to resolve conflicts and support the participation of communities in forest conservation (M. Dupar & Badenoch, 2002). In Northern Thailand, the development of tourism in national parks has also created opportunities for many Indigenous hill tribe communities to develop community-based tourism and ecotourism (Chaisawat, 2005; Chaisawat & Hsu, 2005).

Figure 3.7 Development of Northern Thailand's National Park Management System.
Source: Author.

The conservation plans of Northern Thailand's national parks have adopted the principles of the Convention on Biological Diversity (CBD), in particular Articles 8 (j) and 10 (c) (IMPECT & FPP, 2006; International Centre for Environmental Management (ICEM), 2003a). Figure 3.8 illustrates Articles 8 (j) and 10 (c) that were consolidated into Thailand's conservation policies to enhance efficient collaborative natural resource management between Indigenous hill tribe communities and national park officials (IMPECT & FPP, 2006; ICEM, 2003a).

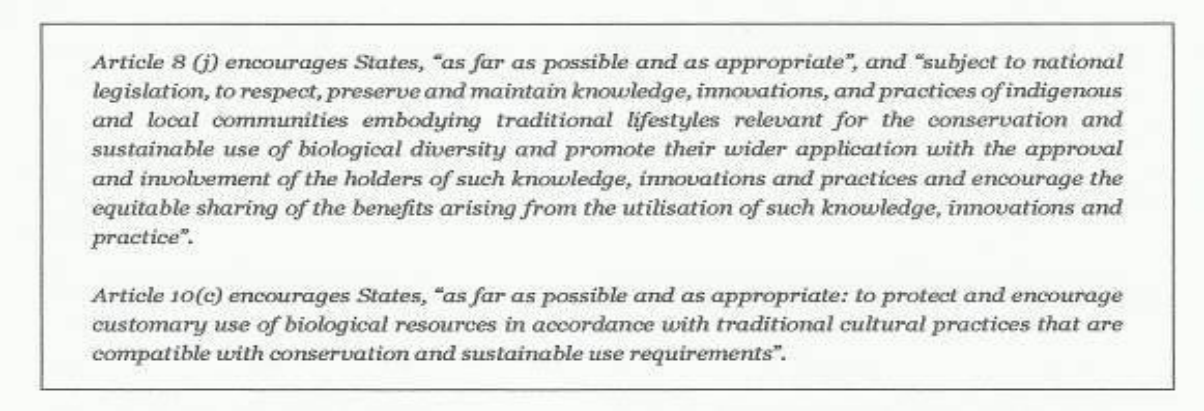

Figure 3.8 Articles 8 (j) and 10 (c) of the Convention on Biological Diversity.
Source: adapted from IMPECT & FPP (2006, p.9).

Many studies argue that the Indigenous communities have the right to play an integral role in the management of natural resources (L.M. Campbell & Vainio-Mattila, 2003; Schwartzman, Moreira, & Nepstad, 2000). The enhancement of collaborative natural resource management and community empowerment are considered important strategies for enhancing effective national park management towards and achieving greater sustainable development of Indigenous people's livelihoods (Anan, 1998; Barnaud, Page, Dumrongrojwatthana, & Trébuil, 2010; Chan, 1995; IMPECT & FPP, 2006; Schwartzman *et al.*, 2000).

In an attempt to address unsustainable development, the Thai Government has implemented various socio-economic development plans and conservation policies (DNP, 2003; Emphandhu & Chettamart, 2003; ICEM, 2003a). The Eighth National Development Plan (1997-2001), led to a significant shift from an economic-growth-oriented approach to a new more holistic people-centred development approach with the aim of ensuring more balanced development (Mongsawad, 2010; NESDB, 2007-2011, 2012-2016). This plan also emphasised co-management, particularly in the protected areas and national parks. The Ninth and Tenth National Development Plans covered the periods 2002-2006 and 2007-2011,

respectively. They emphasised the importance of local participation in environmental management as a means of enhancing social resilience to achieve sustainable development, by taking a people-centred approach (Mongsawad, 2010; NESDB, 2007-2011, 2012-2016).

The Eleventh National Development Plan (2012-2016) emphasises the importance of social resilience and community empowerment in development planning in Thailand, in accordance with the development objectives of the ASEAN Economic Community (AEC[8]), for enhancing the sustainability of local, national, and AEC countries (NESDB, 2007-2011, 2012-2016). Their purpose is to contribute to national development as well as to enhance social empowerment and sustainable development. These strategic plans relate to the sustainable livelihoods of Indigenous hill tribe communities and focus on strengthening democracy, good governance, the rule of law, and promoting human rights and fundamental freedoms (NESDB, 2007-2011, 2012-2016). However, there are several major obstacles to achieve these goals, including political instability, ecological degradation, poor education and socio-economic welfare, and illegal drug problems (NESDB, 2007-2011, 2012-2016). Sustainable development requires enhanced community resilience through the strengthening of economic and social capital, and addressing internal and external vulnerability and uncertainty factors (Mongsawad, 2010; NESDB, 2007-2011, 2012-2016).

Despite the emphasis placed on local participation in environmental management through the process of decentralisation, often the top-down approach still prevails. The public is often left uninformed about the details of policies, and central administration lacks information from the field on policy implementation (DNP, 2003; Emphandhu & Chettamart, 2003; ICEM, 2003a). Another problem is that forestry and national park policies lack continuity, and only temporary solutions can be provided due to the re-formation of natural resource governance every four years with the national election. Furthermore, coordination with social and economic plans has often been inadequate (DNP, 2003; Emphandhu & Chettamart, 2003; IMPECT & FPP, 2006).

[8] The ASEAN Economic Community (AEC) was formed on 8 August, 1967. ASEAN includes ten countries in South-East Asia that aim to enhance collaborative political and economic development (Amador, 2013; Lee, 2011). The AEC originally included Indonesia, Malaysia, the Philippines, Singapore, and Thailand (Amador, 2013; Lee, 2011). Since the late 1990s, AEC membership has expanded to include Brunei, Cambodia, Myanmar (Burma), Laos, and Vietnam (Amador, 2013; Lee, 2011). The primary objective of the AEC is to enhance economic growth, social progress, and socio-cultural evolution among AEC members, as well as to protect regional peace and stability and increase opportunities for member countries to develop their own strategies for sustainable development (Amador, 2013; Lee, 2011).

3.4 Conclusion

This chapter has explained the management system of Northern Thailand's national parks. The primary objectives of these national parks are to protect the remaining forest areas and provide socio-economic benefits through tourism. However, these goals are sometimes in conflict with one another, with many of Northern Thailand's national parks experiencing on-going environmental degradation as a result of unsustainable development to serve mass tourism (Emphandhu & Chettamart, 2003; Hvenegaard & Dearden, 1998a). At the same time, many hill tribe communities living in, or adjacent to, the national parks are struggling to sustain their livelihoods in the face of regulations which restrict their access to natural resources (IMPECT & FPP, 2006; ICEM; 2003b; Johnson & Forsyth, 2002). In seeking to address these problems recent policies have recognised the importance co-management, sustainable tourism, and stakeholder participation in collaborative policy-making. It is hoped that co-management and community-based eco-tourism will help achieve national park management objectives as well local socio-economic development. However, the recent attempts to pursue adaptive co-management in Northern Thailand's national parks have only been partially successful because of a range of factors including, inconsistencies in the development and implementation of co-management initiatives.

In this study, Doi Inthanon, Doi Inthanon and Ob Luang National Park were selected as case study areas. These three national parks are located in Chiang Mai province and are home to several hill tribe communities. Since the establishment of the national parks, these communities have faced significant changes, and have had to adapt customary livelihoods to comply with national park regulations and land use restrictions (Roth, 2004b, 2008). This research was designed to gain insight into the livelihood strategies and environmental management practices of these communities. It also investigates the development of their community-based conservation and co-management initiatives. The next chapter will present the research methods employed in this study.

CHAPTER 4: RESEARCH METHODS

4.1 Introduction

The aim of this chapter is to present the methods adopted to assess the livelihood strategies and environmental management practices in Northern Thailand's national parks communities. Previous chapters provided the background to this research. Chapter 2 discussed the usefulness of the DFID's sustainable livelihood framework (DSLF) to investigate the adaptation of livelihood strategies among hill tribe communities under the regulatory and conservation management systems of Northern Thailand's national parks. The DSLF was selected and applied as an analytical tool by using its guidelines for fieldwork and data analysis. Chapter 3 provided an overview of Northern Thailand's national parks and natural resource management, including the background of hill tribe communities residing within these Northern Thailand's national parks.

4.2 Qualitative Research Methods

Due to the complexity and diversity of people's livelihoods, employing qualitative methods can be more appropriate than quantitative methods to describe, interpret, and learn than quantitative methods (Barbour, 2007). Qualitative methods are useful in addressing natural resource management questions as they allow insight into how perspectives on changing natural settings and social realities are constructed by various participants, as well as their attitudes and opinions on natural resource matters (Ashley & Boyd, 2006; Hennink, Bailey, & Hutter, 2010). As the connections between national park management and Indigenous livelihoods are complex, qualitative methods are commonly used to develop deeper understandings of different peoples' points of views and to describe what is happening in a group, community, or society (Babbie, 2011; Schutt, 2012). Consequently, qualitative methods were used in this study.

In applied social science and environmental management, qualitative research methods are widely used as they facilitate the gathering of holistic information from research participants (Babbie, 2011; Bowen, 2005; Flick, 2009). Qualitative methods, such as, interviews and observation encourage participants to share their stories and experiences. Merriam (2009) and Babbie (2011) describe how the holistic use of qualitative research allows researchers to combine two perspectives – namely, the *emic* or insider's perspective and the *etic* or

outsider's views. Merriam (2009) further explains that the researcher is the primary research instrument in obtaining qualitative data, such as from interviews, and analysing it, to determine research themes and meanings. Babbie further suggests utilising reflexivity to increase research transparency and reduce possible biases. Reflexivity refers to the use of the first person in the study to present critical thinking and improve the communication between the study's aspects and ideas (Babbie, 2011; Bowen, 2005; Flick, 2009). However, this study did not apply the reflexivity technique because it used mixed qualitative research methods, which made reflexivity impracticable. Instead, use was made of the suggestion of Barbour (2007) and Merriam (2009) that qualitative data such as, interview data should be gathered from both insiders' and outsiders' views and then transcribed through the processes of reflection and interpretation to find the comprehensive themes within the data. This meant that more participants were involved in the research.

Qualitative methods can also help to link theoretical perspectives and approaches to data inquiry (Bouma, 2004). In social science research, Barbour (2007) notes that qualitative research methods are commonly applied as an inductive process to create conceptual knowledge from collected data to fill existing gaps in research and/or theories. Research findings are used to identify and highlight themes, concepts, and even theory-specific aspects within the data analysis stage (Barbour, 2007; Hennink *et al.*, 2010; Merriam, 2009). This is the opposite of the deductive process, which is used to test a hypothesis. Qualitative research outcomes are usually descriptive, mostly use words rather than numbers, and may include multiple sources of quotes and photos, such as, archival documents, field notes, participant interviews, excerpts from videotapes, and electronic communication (Barbour, 2007; Hennink *et al.*, 2010; Merriam, 2009). Details of participants' viewpoints may be taken from the words and images that they use in interviews or which are observed (Barbour, 2007). Collected data is then used by the researcher to inform learning and experience derived from the field research (Barbour, 2007; Hennink *et al.*, 2010; Merriam, 2009). Participatory Rural Appraisal (PRA) methods were selected in this study as a mixed qualitative research approach.

4.2.1 Participatory Rural Appraisal

Based on the literature, four main types of participatory research methods have evolved in environmental management and rural development studies: Rapid Rural Appraisal (RRA), Participatory Rural Appraisal (PRA), Participatory Action Research (PAR) (Chambers,

1994), and Participatory Learning and Action (PLA) methods (Chambers, 2007). The most appropriate method is determined by the purpose of research and development project. Chambers (1994) describes PRA methods as having developed out of older RRA methods with improved strategies for data collection for use in rural development studies (Chambers, 1994). In the late 1970s, RRA was developed to reduce the time taken for qualitative data collection. The RRA method was conducted with only key informants or a particular group of research participants and each case study often lacked depth of information. During the 1980s and 1990s, PRA was developed to collect information from research participants who expressed their perceptions and knowledge in their own words to the researchers (Chambers, 1994, 1997; Thomas-Slayter, 2009). The purpose of using PRA is to understand and learn from participants, and to provide recommendations without performing actions that change the participating communities immediately (Chambers, 1994, 1997; Thomas-Slayter, 2009). In the 1990s, Participatory Action Research (PAR) developed to provide recommendation to change community participation and/or behaviours (Chambers, 1994, 1997; Thomas-Slayter, 2009). At that time, PLA research methods were also developed to address the importance of learning and action processes in participatory research.

Chambers (1994) and Thomas-Slayter (2009) suggest that participatory approaches are suitable for rural sustainable development research on environmental management practices. Both PRA and PLA represent families of participatory research methods which have evolved to understand people's behaviours, attitudes, livelihood patterns and practices of sharing (Campbell, 2001; Chambers, 2007). Since the late 1990s, PRA and PLA have been widely applied in agriculture and development, and research projects on social equity, participation and empowerment, land rights and food security, particularly at the community-level (Campbell, 2001; Chambers, 2007). Ideologically and epistemologically, the use of PRA methods aims to seek and embody participatory strategies to empower local and marginalised people, enabling them to express and enhance their knowledge, whilst PLA emphasises the processes of learning practices and actions (Goodarzi, Tavassoli, Ardeshiri, & Ahmadi, 2011; Thomas-Slayter, 2009). The use of PRA and PLA in development studies involves several shifts: from studying things to studying people; from top-down to bottom-up management; from standard to diverse; from control to empowerment; and from exclusiveness to claims of ownership (Goodazi et al. ,2011; Thomas-Slayter, 2009). PRA and PLA focus on personal reflexivity, ethical principles and critical self-awareness, all of which are essential for understanding and learning (Chamber, 2007).

For this research, the aim of PRA methods is to balance the views of research participants and empower them to express and share ideas: creating knowledge through a people-centred approach that focuses on local perspectives (Müller-Böker & Kollmair, 2000; Pahl-Wostl, 2007; Singh et al., 2010; Thomas-Slayter, 2009). PRA methods have been used in various fields, such as, environmental management, sustainable livelihoods, rural development, and rights-based policy development. PRA methods have also been used for research into tourism strategies (Ling & Juo, 2011; Stone & Stone, 2011), community-based natural resource management (Goodarzi et al., 2011; Thomas-Slayter, 2009), and the development of agricultural systems (Chambers, 1994, 1997).

The strength of PRA is that it empowers research participants to share their ideas and stories for the purpose of data analysis (Chambers, 1994, 1997; Thomas-Slayter, 2009). However, the use of participatory methods must incorporate a strategy to deal with the power relationships of community heterogeneities, such as, class, gender, ethnicity, status, and authority (Chambers, 1994, 1997; Thomas-Slayter, 2009). This is time-consuming (Thomas-Slayter, 2009) and a sufficient length of time to complete PRA is required. PRA also depends on the willingness of participants and the time they have available. This type of research requires researchers to have good time management skills and a well-organised research plan.

PRA methods enable researchers to gather and manage various types of data sources from research fields, so a multiple case study approach is ideal (Goodarzi et al., 2011; Hickey & Mohan, 2004; Leurs, 1995). In understanding the background to people's livelihoods, the use of PRA methods can enable the researcher to gain insight from 'bottom up' perspectives through gathering community members' emic (insider) views. Insiders' perspectives are different from etic (outsider) views, such as, those of the researcher, government officials, and NGOs. Normally, the views of outsiders, such as policy-makers or government officers are considered as a top-down perspective and are already commonly found in government environmental planning and policy-making (Bourgoin, 2012; Goodarzi et al., 2011; Holmes-Watts & Watts, 2008). While PRA methods go some way to achieving an emic perspective, I found it necessary to apply some ethnographic methods, as supplementary qualitative PRA methods, such as, interviews and observation to further develop my understanding of participants' lives.

In this research, PRA methods were combined with a variety of qualitative research methods (e.g. interviews, observations and document analysis) to gain insightful information for analysis. PRA methods are a potent means for positively transforming power relations whilst creating space for local and marginalised Indigenous people to share experiences and opinions (Campbell, 2001; Chamber, 2007). Thus, PRA methods are not only employed to learn about others' realities but also to provide opportunities for participants to share diverse perspectives on socio-ecological relationships and economic development trends. In this research, the use of PRA methods aimed to seek bottom-up perspectives based on the diversity of participants' backgrounds, experiences, roles, and social relationships especially in relation to livelihood strategies and environmental management practices. The format of PRA methods also enables the researcher to gather data either in text or visual form, in order to bring breadth and depth to the findings and analysis (Ling & Juo, 2011).

PRA methods are flexible and can be adapted as needed for different communities. The use of PRA methods in this research encouraged community members to contribute stories, and provided further insights into their livelihoods, natural resource management practices, and environmental impacts. The DSLF was used as the checklists to develop interview questions for obtaining insightful information of Indigenous hill tribe communities' livelihood strategies and their environmental management practices. The key research findings were identified and analysed as well as ensure their varidity by using both data and methodological triangulation as a way to integrate data from many sources and methods by respectively. From the above reasons, PRA methods are suitable for this research topic, and specifically, for exploring the livelihood strategies of the six Indigenous communities within the three selected national parks in Northern Thailand. A description of the PRA methods used to gather data during the field research is outlined in Table 4.1.

Table 4.1 Description of the PRA Methods Employed in this Study.

Methods	Description
Individual Interviews (In-depth semi-structured interviews)	Individual interviews conducted by both in-depth semi-structured interviews and informal conversational interviews, which are commonly used in community-based and ethnography research to gain insightful information from individuals (Kvale, 1996, 2007; Kvale & Brinkmann, 2009). They provide an opportunity to develop rapport between the researcher and the interviewee (Chambers, 1997; Thomas-Slayter, 2009).
Observation	Observation enables the researcher to observe events and research participant's activities whilst also observing the livelihood activities of household members and/or community members, which supports information from interviews and enhances the understanding of the researchers (Chambers, 1997; Thomas-Slayter, 2009).
Document Analysis	Document analysis relates to the review of accessible documents and reports from various sources (e.g. government, non-government organisations, and academics). The form of these documents and reports are varied (e.g. archives, written documents, papers, and digital documents). This technique is very useful for providing evidence material and references to support research findings, and this can yeild evidence of common prejudices (Chambers, 1997; Thomas-Slayter, 2009).
Group Interviews	Group interviews use a small group of research participants (2-5 persons per group), enabling them to share their ideas and opinions (Kvale, 1996, 2007; Kvale & Brinkmann, 2009). This can provide in-depth data and generate various perspectives on rural livelihoods (Chambers, 1997; Thomas-Slayter, 2009) and enables the researcher to identify opportunities and constraints for sustainable livelihoods (Amico *et al.*, 2011; Rowe *et al.*, 2012).
Seasonal Calendars	A seasonal calendar of livelihood activities in each community was formulated through the participation of community members. This calendar was illustrated and summarised based on ethnicity to present monthly livelihood activities (e.g. agricultural practices, cultural events, and conservation activities). This calendar can also be used to explain seasonal changes and the production of agricultural products (Chambers, 1994; Goodarzi *et al.*, 2011).
Community Surveys and Mapping	Community surveys include field walks and observation in order to explore a community's buildings, infrastructures, and other facilities, including changes to them (Chambers, 1994, 1997; Pretty, 1995; Rowe *et al.*, 2012). Park officials and community members provided information for drawing community maps and incorporated maps from the database of Geographic Information System (GIS) programme in order to create accurate community maps. These maps are useful for explaining how community members access resources and use their land (Chambers, 1994, 1997; International Institute of Rural Reconstruction, 1998; Pretty, 1995; Rowe *et al.*, 2012).
Photography	The use of photographs can be used to explain information about each livelihood activity mentioned during the interview process. The infromation gathered is based on the experiences and knowledge of each research participant (Chambers, 1994; Thomas-Slayter, 2009).

4.2.2 Multiple Case Study Approach

The case study approach is suitable for addressing 'why' and 'how' questions in relation to describing process or behaviour (Bryman, 2007; Hennink *et al.*, 2010; Yin, 2009). This approach also covers other questions, such as, 'who', 'what', 'when' and 'where' (Baxter & Jack, 2008; Bryman, 2012). The perceived experiences and opinions of research participants are an important part of qualitative data in the case study approach. Context can be defined as an overview of the study sites and research participants, and includes social and natural setting, timeframe, and spatial context (Yin, 2002, 2009). The questions 'how' and 'why' cannot be answered without understanding the context, and may involve a variety of interrelated contextual factors (Yin, 2002, 2009). Consideration of the context is important for understanding the complexity of the multifaceted institutions and stakeholders that influence natural resource use, governance and outcomes (Agrawal & Gibson, 2001; Leomos & Agrawal, 2006; Ostrom, 1999, 2009).

The literature identifies several different kinds of case study design (Yin, 2002, 2009). Stake (2005) classified three types of case studies: intrinsic, instrumental, and collective. An intrinsic case study is also known as a single case study and aims to gain an understanding of a specific case or area. An instrumental case study aims at examining the case to understand something more general than the specific case. A collective case study design is a qualitative research strategy applied across multiple case studies. Yin (2009) recommended that data be collected from multiple case studies with various qualitative methods and data sources to help overcome the weaknesses of a single case study. The design of the single case study lacks the ability for comparison and, therefore, specific research findings are unable to be generalised to describe different populations (Shekedi, 2005; Stake, 2005, 2010). In this research, the main purpose of using multiple case studies is to provide in-depth insights for selected communities. This means that two or more cases are compared in order to provide comprehensive information to enhance understanding of the research phenomena and its related issues (Creswell, 1998, 2012; Stake, 2005, 2010; Yin, 2009).

As this research seeks to understand the general patterns of the livelihood strategies of the six selected villages in terms of similarities as well as specificities based on context and background, a multiple case study approach is more suitable for this research. A multiple case study approach is also appropriate for investigating the complex relationships between society and the natural environment (Creswell, 1998, 2012; Stake, 2005, 2010; Yin, 2009).

The multiple case study approach is recognised as a traditional method for studying several bounded systems, which are not entirely closed systems but are complex in their social and ecological relationships (Creswell, 1998, 2012; Stake, 2005, 2010; Yin, 2009).

Adopting a multiple case study approach also makes it possible to link the information of each case study to enhance holistic understanding of the research topic (Baxter & Jack, 2008; Merriam, 2009). Stake (2005) recommended this approach for gathering data from various populations in many sites, in order to gain a holistic understanding through context and reasoning, which would otherwise be hidden by a singular case. A purely quantitative approach would not have allowed for the collection of detailed expressions, ideas, and stories from the research participants. The qualitative multiple case study approach enabled the researcher to gather the perspectives of various research participants with the aim of widening understanding and interpreting meanings in relation to the research questions. This not only provided the benefit of an accurate interpretation of the data, but also allowed for the generalisation of data across multiple sites and enabled a cross-case analysis to be undertaken (Shekedi, 2005).

The multiple case study approach is used in this study to collect data from six selected hill tribe communities within the selected three national parks using PRA methods. Data and methodological triangulation are recommended as useful strategies to enhance the reliability and validity of qualitative data and to increase the accuracy of data while reducing possible bias (Denzin, 2006; Denzin & Lincoln, 2005).

4.3 Fieldwork Processes and Methods

This section provides an overview of the field research preparation and planning, including the layout of the multiple case study design that is used in this research. Details are also provided regarding access to the study sites, the selection of case studies, descriptions of the study areas, the sampling techniques and recruitment process used, field research ethics and data collection methods used. An explanation of the PRA methods used in this research is also provided.

4.3.1 Fieldwork Preparation and Processes

The preparation and planning of fieldwork needed to be carried out before the fieldwork started to ensure that the data collection was well-organised (Baxter & Jack, 2008; Myers,

Mittermeier, Mittermeier, Fonseca, & Kent, 2000). Fieldwork planning included selecting the research methods and data collection processes to be used to meet the research objectives, whilst also maintaining flexibility around the use of methods, particularly important in multiple case study research (Merriam, 2009; Robson, 2011; Stake, 2005).

Before the fieldwork began, a literature review was undertaken to understand the concept of sustainable livelihoods and the DSLF was adopted for this study. The six case study sites were then selected and a plan for collecting data was made. As part of the fieldwork preparation, ethics approval had to be obtained, outlines for interview questions and checklists created, and approval letters from the Department of National Parks, Wildlife, and Plant Conservation gained to conduct research in the national parks and make contact with research participants. The ethics application had to be approved before starting data collection. The details of the research ethics are provided in section 4.3.3 and 4.3.6. Preparation and planning needed to be flexible and I had to be aware that unpredictable events might occur during fieldwork, such as, a natural disaster.

For the data collection process, appointments were first made with national parks officials, academics, and representatives of Non-Government Organisations (NGOs) and tourism agencies for interviews. After this, appointments were made with the Park official of each village to be visited, to gain their approval and assistance in starting fieldwork. Subsequently, each village was revisited in order to obtain further information. Mixed qualitative PRA methods were employed at the case study sites.

All collected data were transcribed and translated from Thai to English and then manually organised and coded into themes and connected categories. This data was supplemented with data from the field notes. Both the *NVivo* programme (a software package for qualitative data analysis) and manual data management were used to categorise and manage the data collected. The third stage of this process was the data analysis.

4.3.2 Selection of Case Study Sites

In order to ensure that relevant information was gathered, the selection of suitable case study sites was crucial. The research topic and problem statement were explicitly stated and defined and enabled the designing of the research methods and the planning of data collection, including case study site selection. The three national parks selected were Doi Inthanon, Doi Suthep-Pui, and Ob Luang National Park. The three selected national parks

are settlement areas for Indigenous hill tribe communities, particularly the Pga k'nyau (Kariang) and the Hmong. These communities have necessarily changed and developed their livelihood strategies and environmental management practices in light of national park regulations and prohibitions.

National Park officials had no influence on my selection of study sites. Rather, my choice of study sites was based on the selection criteria of this project. My study sites include six villages located in three national parks: Doi Inthanon (Baan Mae Hang Luang and Baan Pa Hmoon); Doi Suthep-Pui (Baan Hmong Mae Sa Mai and Ban Hmong Doi Pui); and Ob Luang (Baan Huay Ka Noon and Baan Pa Kluay). It is noted that these national parks comprise of either just one hill tribe (Pga K'nyau or Hmong) or a mix of both hill tribes. These villages were selected because each community has different livelihood strategies, development interventions, infrastructure, and national park management. In addition, the study sites are varied; Doi Inthanon, Doi Suthep-Pui, and Ob Luang were established in 1972, 1981, and 1991, respectively and so have been confronted by diverse political, environment and economic challenges over their timeframes.

The location and security of the three national parks were important considerations in selecting the case study sites. Sensitivity around conducting fieldwork in the selected national parks was particularly high, due to the many projects taking place and the tourist attractions located there. Management of the selected national parks varied according to tourism development and the level of co-management with the Indigenous hill tribes residing within them. A description of the three national parks and the participating Indigenous communities is provided in the next chapter.

Careful selection of the case study villages was also important for gaining the rich data required for this study. There were three selection criteria used in this regard. The first criterion was that the case study villages were located in national parks in Chiang Mai province where Indigenous communities still largely maintain their cultures and traditional ecological knowledge. The second criterion was that the villagers in the study area were willing to participate in the research. The third criterion was that villagers had experienced conservation activities and/or were involved with co-management initiatives in the parks. Six villages met all the criteria. The following six villages were logistically ideal due to their proximity to Chiang Mai town centre, the level of security and potential reception, and accessibility of resources:

- Doi Inthanon National Parks: Baan Mae Klang Luang Village and Baan Pa Hmoon Village (two Pga k'nyau (Kariang) villages);
- Doi Suthep-Pui National Park: Baan Mae Sa Mai Village and Baan Hmong Doi Pui Village (two Hmong villages); and
- Ob Luang National Park: Baan Huay Ka Noon Village (Pga k'nyau (Kariang) village) and Baan Pa Kluay Village (Hmong village).

This study identified three Pga k'nyau (Kariang) villages and three Hmong villages for assessing socio-ecological relationships in Northern Thailand's national parks. The current research topic embraced this aim and further explored the diversification with respect to livelihood strategies and environmental management practices in Northern Thailand's national park communities. In addition, this study investigates the development of community-based conservation and co-management initiatives in each case study site.

4.3.3 Process for Obtaining Permission to Conduct Field Research

In the initial stage, I had to make appointments for individual interviews with the park official of each national park and the park official of Northern Thailand's National Park Research Unit to obtain approval letters granting permission to conduct my research in the protected areas. During these interviews, I provided an outline of my research topic, including fieldwork planning and the methods I would use. After completing these interviews, I received their signatures of approval. At times it was difficult to arrange suitable times for the interviews, especially when original field visit times needed to be rescheduled. The necessary approval letters were collected and were sent to the Office of Technical Consultation (OTEC), Department of National Parks, Wildlife, and Plant Conservation (DNP), along with the research proposal to apply for permission. This was needed in order to comply with the Royal Forest Department Regulations for Studying or Conducting Research in Protected Areas 2542 B.E. (1999 C.E.). I then obtained approval from the Department of National Parks, Wildlife and Plant Conservation to conduct research within the selected Northern Thailand national park areas (see Appendix 2).

Once permission was granted, data collection began. First, I interviewed the park official of each of the selected national parks and the Park official of Northern Thailand National Park Research to obtain their perspectives on the management of the national parks and people's

livelihoods. Each was contacted in turn and appointments were made via email and/or telephone to meet and interview them. During this preparation stage, much of this was done through their secretaries. Other research participants from Non-Government Organisations (NGOs), academics, and tourism sectors were also recruited and interviewed. Different interview questions were designed for each group in order to gain helpful and relevant information (see Appendix 6).

For the first visit to Ob Luang National Park, I contacted one member of the research staff from Ob Luang National Park and one member of staff from Inter Mountain Peoples Education and Culture in Thailand (IMPECT[9]). They provided information on the national parks and some previous research documents, all in Thai. During February 2012, I advertised for four research assistants by posting an advertisement on the announcement board at Chiang Mai University. I also asked my previous lecturers to suggest individuals who might be suitable research assistants to assist in the data collection process. My preference was to have two men and two women as this would allow them to work together at the field sites. Visiting the field sites together would enable them to provide mutual support and assistance to each other. I interviewed all the candidates and questioned each candidate's study background and research experience. Four research assistants were selected. Two of my assistants were postgraduate students in Geography and Environmental Engineering at Chiang Mai University: one male and one female. The other two research assistants were both undergraduate students at Chiang Mai University studying Ecology (one male and one female). They all had experience with qualitative field research. We had several meetings to discuss their roles during the data collection processes, and plan the fieldwork. Their roles included note taking while I conducted interviews, taking photos and videos, and transcribing tape-recorded data. When necessary, they also worked as translators. They accompanied me while I conducted community surveys and helped me process PRA activities. After our meetings finished, I continued with the data collection process. All research assistants and the driver signed confidentiality forms, which referred specifically to ethical implications for the research assistants and anybody else involved with this study.

[9] A non-government organisation that works with rural communities, especially hill tribe communities, within Northern Thailand national parks.

For my second visit to each village, I hired a professional driver with a four-wheel drive (4WD) car. Although all six villages were accessible by 4WD, the two villages within Ob Luang National Park were more remote and road conditions were poor. These were likely to be impassable during the rainy season. Therefore, it was necessary that the second visit to Ob Luang National Park be earlier than the other two selected national parks. Due to road conditions and the size of the car, my research assistants and I needed to stop on the way and ask local villagers to collect us and take us to the village. The park official of the village and his assistant collected us on their motorcycles. Our driver parked his car near our accommodation and did not participate in the data collection activities.

Between February and August 2012, my research assistants and I visited the six villages three times to carry out data collection (see Appendix 5). In each village, the key contact person was the park official of the village who gave permission to conduct field research in their village. Before I travelled to each village, I contacted the park official of each village, his assistants or the village committee via mobile phone to ask their permission to survey community areas and collect data. In each village, I introduced my research team and myself. I provided an overview of my research and data collection processes to the park official of each village and his assistants. We then discussed my research topic and exchanged contact phone numbers. This was important in developing rapport and easing the data collection process during subsequent visits. After this, we asked the park official of each village and his assistants to help us survey village areas and informed them of our intent for future visits. After completing the survey, I confirmed the visiting schedules for data collection with the park official of each village and their assistants. I also asked for permission to attend community meetings on at least one occasion per community. Therefore, the park official of each village, his assistants and village committee became my local contact people during subsequent visits.

Before I started data collection, I needed to receive individual consents from villagers, and I had to provide them with enough time to consider whether or not to participate in this study. Once all consents were completed, I began interviews using PRA methods. In each village, I interviewed the park official of the village, his assistants, and some committees separately from the villagers. I also conducted individual interviews with villagers at places and times convenient for them, usually in their houses before or after work.

4.3.4 Sampling and Recruitment Methods

In a qualitative study, the sample size is flexible and changeable (Flick, 2009). Based on the time and resources available, having an appropriate sample size is important as it is impossible to deal with a whole population (Creswell, 2012; Creswell & Miller, 2000). In this study, I employed purposive, random and snowballing sampling to recruit research participants. These sampling methods gave me the opportunity to get to know the key people in each village who could provide rich information relating to both before and after the establishment of the national parks, including the adaptation of livelihood strategies and environmental management practices.

There are various methods for qualitative sampling. Flick (2009) suggests that purposive sampling is a suitable method for multiple case studies as it allows researchers to choose cases which will enable them to gain rich information. Purposive sampling can also help save time and resources (Merriam, 2009). Random sampling and snowball sampling were also applied to this study so that an appropriated number of research participants who could be representative of each case study were available (Merriam, 2009). Merriam (2009) refers to random sampling as a flexible sampling technique suitable for qualitative research particularly in multiple case studies. Many researchers also suggest snowball sampling as a valuable strategy for finding research participants (Cohen & Arieli, 2011; Minichiello, Aroni, & Hays, 2008; Streeton, Cooke, & Campbell, 2004). This technique can be used as an alternative sampling method in qualitative research (Cohen & Arieli, 2011; Handcock & Gile, 2011). Generally, snowball sampling starts with one research participant who provides the name of a second potential participant who, in turn, provides the name of a third, and so on (Cohen & Arieli, 2011; Minichiello *et al.*, 2008; Streeton *et al.*, 2004). Handcock and Gile (2011) suggest that the advantage of snowball sampling lies in the way in which the researcher is able to identify a person of interest based on the suggestions of other research participants so that researchers are able to recruit research participants when they are unfamiliar with the social group of the selected research setting (Cohen & Arieli, 2011; Handcock & Gile, 2011).

Purposive sampling was used with the park official of the community, his assistant, and community committee in order to gain insightful information on the background of the community and their perspectives on potential livelihood strategies and natural resource management practices. After completing their interviews, they provided me with the names of other villagers who I could interview. Both random and snowball sampling methods were used as supplementary sampling methods in this study. I took care in adhering to ethical protocols before I began my interviews. I found that villagers were connected through strong social networks. These networks were suitable for recruiting participants by random and snowball sampling as the villagers were able to invite and introduce their friends, relatives, and other people in the village to be potential participants. These processes were conducted based on the willingness of each person, with no compulsion to participate.

All research participants' acknowledged their willingness to participate in the study by signing a consent form. If a participant was unwilling to participate, I thanked them for their time and moved on. This occurred on only a few occasions. If no further names were provided, I then used a random selection process to find research participants. The sampling processes were conducted until all the interviews had been completed and the aim of interviewing had been met. My research assistants and I spent much time recruiting participants in order to reach our recruitment goal of at least five male and five female participants in each village. These research participants consisted of the park official of the village and his assistants, village committee members and villagers. The total number of research participants in the six villages was 72.

4.3.5 Information about the Research Participants

In total, 116 research participants were interviewed, as outlined in Table 4.2. Three ethnic groups (Thai, Pga k'nyau, and Hmong) participated in this study. The majority of research participants were community members from the six selected villages: 36 Pga k'nyau and 36 Hmong. The research participants also included 7 national park officials, 14 academics, 8 NGO staff and 15 tourism agency staff.

Table 4.2 Research Participants.

1.) Government Sector (Total of 7 persons)

- National park officials (3 persons)
- Representative s from Watershed Management (1 person)
- Representatives from Northern Thailand National Park Research (1 person)
- Representatives from the Royal Project (2 persons)

2.) Non-Government Organisations (Total of 8 persons)

- Representatives from the Sustainable Development Foundation (SDF) (2 persons)
- Representatives from CARE Thailand (2 persons)
- Representatives from Inter Mountain Peoples' Education and Culture in Thailand Association (IMPECT) (2 persons)
- Representatives from Forest Peoples' Programme (FPP) (2 persons)

3.) Six Communities (Total of 72 persons)

- Representatives of each community (12 participants per community, including the park official of village, assistant/coordinator of the village, and villagers)

4.) Academic Communities (Total of 14 persons)

- Representatives from Environmental Science, Ecology, and Social Science, Chiang Mai University (10 persons)
- Representatives from the Forest Restoration Research Unit, Department of Biology, Faculty of Science, Chiang Mai University (4 persons)

5.) Tourism Agencies (Total of 15 persons)

- Tourism business owners (3 persons), tourist guides (6 persons), and tourists (6 persons)

Total Research Participants : 116 persons

4.3.6 Research Ethics

Massey University requires all researchers to have completed ethics screening questions, an application for ethical approval, and related documents (Massey University Human Ethics, 2010) prior to research. In this research, ethical considerations arose in two contexts – those applying before and during fieldwork. In October 2011, prior to commencing research, I completed the full ethics application: HEC Southern B Application no. 11/62. The Massey University Human Ethics Committee (MUHEC Southern B) approved this on 26 October 2011, for three years for this research (see Appendix 1).

During the initial stages of research, I provided each community involved with information (in written form and/or by way of an oral brief/ presentation). This included information about the research and explained the purpose of the study, including their rights as participants. Secondly, I provided a consent form to each research participant, explaining that participation was purely voluntary and that they could decline to participate. Participants were given sufficient time (a day) to reach a decision about participating and to contact friends and family for advice and support if needed.

I stayed in each village for at least three days and all research participants could contact me at any time to ask for more information. I also stayed in Chiang Mai city for seven months until I had completed my field research in the six selected villages and completed interviews with the other research participants (see Table 4.1). I selected Dr Wantanee Chawapong as my research co-ordinator as she did not work for any of the national parks and had no conflicts of interest She works at the Provincial Health Promotion Organisation in Chiang Mai and her expertise relates to the enhancement of rural communities' health support and the management of health care centres. In accordance with research ethics requirements, participants were required to sign a consent form to confirm their willingness to participate. The use of consent forms is culturally appropriate for conducting social research in these communities as consent forms have been used there in previous projects. Once I received a signed consent form, an interview was arranged for a mutually agreeable time and place. The interviews usually took place at the participant's home or at a place suggested by them, such as, at their work area (for example, a small cottage in the paddy rice fields, a room at a plant nursery, at a homestay, or at an eco-lodge for tourist accommodation).

Each interview lasted between one and one and half hours. Semi-structured interview guidelines and checklists of questions were used during the interviews (see Appendix 6). Sometimes, participants were re-interviewed to ensure that information was correct. After all the interviews were completed, participants received a token of appreciation. This was offered to them only after their involvement in the research had ended. Thus, the token was not used to incentivise participation in the research.

In accordance with ethical requirements, interviews were only conducted with participants over 16 years old as stated in the MUHEC Ethical Application. In each village, I also obtained permission from the Park official of the village to conduct research there and interview participants. Permission was also given in order to take photos of the village,

agricultural areas, household settings and facilities, garbage areas, food storage areas, and livelihood activities. Photos of people were only included in this study if the relevant individuals were happy to sign a consent form and allowed me to take their photo. My research assistants and I only took photos in public places. After these photos had been taken, participants had to view and approve them for us to use later.

Prior to commencing data collection, it appeared that language and cultural barriers could be a concern for communication, so my research assistants and I learned about the background of the participating Pga k'nyau and Hmong villages to better understand their basic language and culture. This is a recommended strategy that helps avoid uncomfortable moments and misunderstandings between the researcher and participants. However, as most of the research participants in the villages could speak Thai, there were fewer language barriers than I had anticipated.

To overcome cultural barriers, my research assistants and I learned about the culture of the Hmong and Pga k'nyau from the park officials of the villages before starting field research. During the interviews, my research assistants and I often spoke Thai. Sometimes, research participants needed assistance to translate some Thai words into the Pga k'nyau or Hmong languages. In these cases, my research assistants interpreted and transcribed the Pga k'nyau and Hmong languages for me. Twice during the interviews, research participants asked to stop the interview due to family emergencies. Each time, I stopped the interview and returned their consent form to them. After completing the interviews, I reviewed the recorded data together with my research assistants. All participants were to be anonymous to readers in the final thesis and any publications arising from the results. I ensured that their confidentiality was protected.

4.3.7 Data Collection Methods

This study employed Participatory Rural Appraisal (PRA) as a mixed qualitative research method to investigate livelihood strategies and environmental management practices in Doi Suthep-Pui, Doi Inthanon, and Ob Luang National Parks in Northern Thailand. The core methods used were interviews, observation, and document analysis. I mainly used in-depth semi-structured and informal conversational interviews with representatives from the government, NGOs, academics, and the tourism sector. The DFID sustainable livelihood framework was used to generate the themes for interview questions. Appendix 6 contains the

interview guidelines and questions used with the different groups of research participants. Within the six communities, a variety of qualitative PRA methods were employed with community members. These methods included, interviews (individual and group), observation, photography, community surveys, mapping, and seasonal calendars. An explanation and discussion of the main research methods is provided in the following section.

Interviews

Fontana and Frey (2008) identified three interview types: structured, unstructured, and semi-structured. Structured interviews consist of questions with a limited choice of answers and a limited set of response categories (Fontana & Frey, 2008; Kvale, 1996). Unstructured interviews contain open-ended questions aimed at generating in-depth discussion and are often used in group discussions and/or casual conversations (Fontana & Frey, 2008; Kvale & Brinkmann, 2009). Semi-structured interviews are a combination of structured and unstructured interviews and are a flexible form of interview guided by open questions (Flick, 2009; Kvale, 1996) and provide a more relaxed atmosphere for the research participants to express their ideas and opinions (Flick, 2009; Kvale, 1996). Kvale and Brinkmann (2009) suggest that semi-structured interviews are the most effective for gaining insightful information from research participants and allow the researcher to explore the participants' opinions, views and attitudes, as well as to understand the meanings of their answers (Kvale & Brinkmann, 2009). In this study, semi-structured interviews were chosen for individual interviews, and both unstructured and semi-structured interviews were used for group interviews.

Individual Interviews

Adapting a semi-structured approach meant that some later questions could be adjusted based on discussions within the interview. The individual interviews involved a verbal exchange of questions and answers, such as, stories, opinions, and ideas through the reciprocal efforts of one interviewer with one interviewee (Fontana & Frey, 2008; Kvale & Brinkmann, 2009; Minichiello *et al.*, 2008). This type of interview, also known as two-way communication is useful to gain insightful information from interviewees in response to research questions and related themes (Kvale, 1996; Skinner, 2012).

In this study, I used individual interviews as a core data collection method in the six selected communities and with the other research participants. One significant advantage of this

approach was the ability to build rapport and trust while conducting interviews (Fox-Wolfgramm, 1997; Golden-Biddle & Locke, 2006; Skinner, 2012). Additionally, individual interviews enable the researcher to gather useful information within a specific period of time (Skinner, 2012). In the six villages, small group interviews were also used, dependent on time availability and situation, because many research participants felt more comfortable with this approach and requested it.

Small Group Interviews

Small group interviews generally involve a small group of research participants (no more than four) while focus group discussions involve larger groups (Babbie, 2011; Flick, 2009; Fontana & Frey, 2008). Flick (2009) argues that in some cases the focus group discussion can mean a lack of opportunity for all research participants to speak and share their ideas equally, as some participants may become dominant within the group. Fontana and Frey (2008) suggest that small group interviews allow the researcher to use semi-structured and unstructured interview questions throughout the interview, and give all research participants an equal opportunity to share ideas and opinions. Group interviews can empower research participants to contribute to the discussion, helping the researcher to further develop the flow of conversation between the researcher and interviewees, and build rapport (Babbie, 2011; Flick, 2009; Fontana & Frey, 2008). Additionally, small group interviews are convenient, economically advantageous, yield high quality information and are less time consuming.

Consequently, small group interviews were used as an additional interview method. During the small group interviews I was able to directly observe group communication, behaviour, processes, and interactions, which enabled me to gain a greater understanding of Pga k'nyau and Hmong livelihood strategies including their environmental management practices. For the small group interviews, an attempt was made to form homogenous groups based on both ethnicity and gender in order to reduce bias or other influencing factors. These factors may have otherwise occurred due to dominance in ethnicity and/or gender. In the six selected villages, a group interview was conducted with at least one group.

A summary of the number of individual and group interviews conducted in the six villages is provided in Table 4.3. In some cases, the research participants preferred to participate as a small group of friends within a homogenous group (the same ethnicity group), so I interviewed them all together. Sometimes, it was necessary for us to wait until the research

participants finished their daily work before we could speak with them. During the process of group interviews, I provided each participant with an explanation of the research, informed them of their rights as participants, and utilised individual consent forms. Occasionally, when we conducted the interviews at research participants' homes (at their request), it was necessary to stop several times because they were called away by household members to participate in daily life activities. We were, at times, able to recruit more than one person at a time and conduct a group interview instead of individual interviews.

Table 4.3 The Number of Individual and Group Interviews in the Six Villages.

	Doi Inthanon National Park				**Doi Suthep-Pui National Park**				**Ob Luang National Park**			
	Baan Mae Klang Luang (Pga K'n yau)		**Baan Pa Hmoon (Pga K'n yau)**		**Baan Mae Sa Mai (Hmong)**		**Baan Hmong Doi Pui (Hmong)**		**Baan Huay Ka Noon (Pga K'n yau)**		**Baan Pa Kluay (Hmong)**	
	Men	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**	**Men**	**Women**
Individual Interviews (1 person)	3	4	4	3	3	2	4	4	4	2	4	4
Group Interviews (persons per group)	3	2	2	3	3	4 (2 groups)	2	2	2	4 (2 groups)	2	2
Total Interviewed Persons by Gender	6	6	6	6	6	6	6	6	6	6	6	6
Total Interviewed Persons by Village	12		12		12		12		12		12	

The purpose of using both individual and group interviews in this study was to gain different views on livelihood strategies while reducing any bias in the data due to gender or ethnicity. Throughout the fieldwork, I also utilised other qualitative research methods, such as, observation, photography, community survey and mapping, and seasonal calendars to support the interview data (see Table 4.4). I then transcribed all the gathered data and separated the results for Hmong and Pga k'nyau respectively. After this, I analysed and compared the results across the communities.

Observation

I employed 'observation' as a data gathering method. Observation is a method of ethnographic fieldwork associated with anthropological research (Angrosino, 2008; Denzin & Lincoln, 2008; DeWalt & DeWalt, 2011). Observation enables researchers to observe the daily life and social relationships of research participants. However, gaining permission to

access the social settings of a community is a significant challenge. Bernard (1994) has identified various facets in the use of observation that must be addressed: choosing the site, gaining permission, selecting key informants, and familiarising oneself with the culture. I undertook research to understand the background of the research participants and how to obtain permission to observe their communities. The community events that took place in public areas were easy to access and observe. However, non-public events usually require permission to gain access, and this is usually through a gatekeeper and/or park official of the community (Bernard, 2005; Kearns, 2000). However, either national park officials or head of village did not act as gatekeepers to the communities in this reasech because all observation have been conducted in the public areas.

Table 4.4 Summary of Interview Themes, Tasks and Data Collection Methods.

Themes of Interviews	Research Task	Data Collection Methods
1. The selection of livelihood strategies and activities.	● Investigate the selection of livelihood strategies and activities to meet the basic needs of the community and/ or household members. ● Explore the various strategies that each community and household members utilise to earn a living and to deal with changes and vulnerability factors.	● Interviews (individual and group) ● Observations ● Photographs ● Document analysis (sources of secondary data) ● Community survey and mapping ● Seasonal calendar
2. The background of livelihood resources, and the impacts of environmental changes on livelihoods.	● Explore the livelihood capitals and availability of resources within the community. ● Investigate the impacts of vulnerability factors on livelihoods.	● Interviews (individual and group) ● Observation ● Photographs ● Document analysis (sources of secondary data) ● Community survey and mapping
3. Vulnerability factors that impact on sustainable livelihoods.	● Explore the living conditions of community and/ or household members. ● Investigate the impact of factors (or vulnerability contexts) which affect livelihoods, household income, migration, health, and living conditions. ● Explain how these impacts change their livelihoods and how they adapt livelihood strategies to cope with these issues.	● Interviews (individual and group) ● Observation ● Photographs ● Document analysis (sources of secondary data) ● Community survey and mapping ● Seasonal Calendar
4. The contributions of livelihood outcomes.	● Explore livelihood strategies and their outcomes with regards to the natural resource management practices of households and each community.	● Interviews (individual and group) ● Observation ● Photographs ● Document analysis (sources of secondary data) ● Community survey and mapping

During data collection, my research assistants and I stayed in each village for at least three days in order to develop rapport with the park official of the village, village committee and the other villagers. During this time, each park official of village and committee assisted us with community surveys and accommodation, providing us with a reasonable rate. The park officials of each village also allowed us to join the community meetings and took a leading role during meetings in introducing us to community members. We were able to participate in their meetings, take notes, and sometimes using audio recordings in order to revise our notes later.

Photography

Photography was used to present evidence supporting participants' accounts of both the past and present situation of the local people (Clancey, 2001; Markwell, 2000). Photography has been widely used by qualitative researchers in various disciplines, including education, anthropology, social science, cultural geography, health sciences and psychology (Della & Michael, 2012; Kaplan, Miles, & Howes, 2011; Markwell, 2000). Photographs can provide rich details and contextualise information relating to the experiences and reflections of an individual participant (Markwell, 2000). Photographs of the participants and study sites can help present their stories, livelihoods, reflections, and relationships, and enhance understanding of how the participant engaged in the activity when the photo was taken (Clancey, 2001; Markwell, 2000). The use of photographs is a way of depicting data in its real situation in its natural setting (Clancey, 2001).

Photographs were used in this study to enhance the ability of the researcher and readers to understand the story through visual depiction (Markwell 2000). Photographs provide evidence of the real natural and social setting at a particular time and reduce the epistemological gap between the research participants' experiences and the interpretation of the researcher. I used photographs to depict the livelihoods of the communities and took many photos of their social activities and the study sites. I also used some photos from community members (with permission) to help present the data and support the data analysis of this study.

Community Surveys and Mapping

The purpose of community surveys and mapping with regard to PRA is to explore changes in the community's infrastructure and how they access resources (Chambers, 1994, 1997;

Pretty, 1995; Rowe *et al.*, 2012). Community mapping is a technique that can be adapted for multiple purposes in livelihood surveys and can provide details of a 'common' map and changes in resources. It can also lead to discussion around how women and men interact with their resources and areas (land use) (Chambers, 1994, 1997; International Institute of Rural Reconstruction, 1998; Pretty, 1995; Rowe *et al.*, 2012).

My research assistants and I conducted community surveys together with the park official of each community and community members during the time we stayed in each village. GIS and topography maps were also utilised to make the community mapping more accurate. This activity was a collaborative effort between me, my research assistants, the park officials of the communities, their assistants, and some community members in order to draw a visually descriptive community map providing details of the study site. These maps will be presented in this thesis. The information provided in the community map includes all details of the community's buildings, facilities, agricultural areas, and surrounding natural resources.

Seasonal Calendar

A seasonal calendar depicts the key events in the cycle of farming systems, seasonal changes and agricultural products within a community, all relating to livelihood patterns (Chambers, 1997; Thomas-Slayter, 2009). In this research, seasonal calendars were developed based on interview data (see Chapter 5, 6 and 7).

4.4 Data Management

The survey team compared written notes and shared opinions about the information gathered from each village after we finished the fieldwork. All the data from the individual field notes were gathered into one electronic file at the end of each day. Photos taken each day were also filed electronically with the relevant field notes. Hard copies of photos and documents were scanned so that they could be stored electronically at my house when I returned from fieldwork.

Interview data were gathered and collated in a similar way. This included collecting the MP3 audio recording device from my research assistants at the end of each day and downloading the recorded interviews onto my computer. Recordings were replayed to check the quality of the sound and recorded data and saved onto my computer and deleted from the recording

device. Interview data were saved as sound files on my password protected personal and office computers.

Prior to analysis, sound files were transcribed and then translated into Thai and English by myself and my two research assistants. These Word documents were filed with the respective sound files. Temple and Young (2004) identified two key challenges of the translation process; first, the effort and time-consuming process of translating (in this case, from Thai into English); second, maintaining the original meanings of the translated data. To overcome these challenges, I reviewed the interview data and field notes at least twice, and then translated them from Thai into English by working closely with English proof-readers to ensure the data was accurately recorded.

During the next step of data management, I identified themes relevant to the research objectives and created codes. I used both *NVivo* and the manual method of qualitative data analysis (QDA) to manage and analyse the gathered data in the initial stage and organise themes and related details (shown in Appendix 7). *NVivo* software is useful for managing qualitative data, and particularly for data organisation in English (Bergin, 2011; Bryman, 2012; Hoover & Koerber, 2011; Leech & Onwuegbuzie, 2011; Robson, 2011).

All transcripts of the collected interview data were reviewed and reorganised to locate the themes. For the manual method of QDA, I made two photocopies of my field notes and kept them in separate folders to safeguard them from being lost. The field notes were organised and read through again to get an overview of the data. During these reviews, I wrote notes on the side of the text as the data generated ideas, which enabled me to better understand it. In addition, the field notes were transformed into written notes. After this, I used coloured highlighter pens to separate the data and help identify themes and codes. This process was done for each village and recurring themes and meanings of these themes were noted and identified in this process. A review of related literature continued throughout the QDA process and, during analysis, areas that needed to be added to the literature review were also highlighted.

4.5 Data Analysis

During the first stage of the QDA process, I identified themes and connections within the data as explained in the data management section. I also focused on my written reflections of not only what the research participants said, but also *how* they said it and what factors may have

led them to say it. These reflections also related to several contexts including socio-cultural, economic, and geographical contexts, which defined the positions the participants were discussing at different times. Events and local contexts were captured better when the original Thai field notes were reviewed at the same time as listening to the recordings, reading through the transcriptions, or reviewing the photos. Next, I applied various techniques for the QDA process in accordance with Denzin (2006), Bryman (2012), and Robson (2011), who recommended various techniques and tools in order to evaluate and validate qualitative data.

QDA methods involve an iterative process of interpretation, description, and conceptualisation. Bryman (2012) suggests that the QDA process should be applied to both inductive and deductive interpretive processes to generate concepts and linkages between data to present findings. These processes allowed me to obtain a holistic view when the data were analysed. Although I used NVivo programme, I gained greater understanding when I reviewed my original field notes and transcriptions in Thai together with an English translation. I found that the manual methods of QDA were most suitable for this study and were thus used in the last stage of data analysis and to save time. The final step of data analysis was to establish data connections. Connections between themes and results were used to explain the diversity of livelihood strategies and environmental management practices as presented in the findings.

I used both NVivo and manual methods for analysing the qualitative data of this research. Based on comparisons between the manual and NVivo methods, the manual method allows more subjectivity, whilst the NVivo method is more objective (Hoover & Koerber, 2011; Leech & Onwuegbuzie, 2011). The use of NVivo has been critiqued by Hoover and Koerber who consider that its use may create a loss of meaning if some words or specific terms are changed as part of a program analysis error. This is not the case for the manual method. Both methods were time consuming, however, the added depth of meaning gained from the application of the manual method made this method more valuable. I shifted from using NVivo to manually analysing data during the last stage because NVivo had become unreliable: there were many words in the native hill tribe languages which could not be directly translated in NVivo. In addition, the manual method took me back to the raw data from the research field notes, which also helped me recollect the discussions that had taken place. Sometimes this would help me to recall things that I had not picked up on when I first collected the data, but which were also valuable to the research. Overall, I found that the

manual method was superior to NVivo in terms of identifying the key themes of research findings, enhancing the accuracy and meaning, and more generally as a way to overcome language translation issues.

In this study, I used both data and methodological triangulation,[10] as recommended by Denzin (2006), to combine and assess the data in order to enhance the validity and trustworthiness of the data analysis. Research data were derived from primary and secondary sources, which were provided by a mixed-qualitative methods approach that was employed in multiple case study sites. Themes were validated by following codes and sub codes for a range of sources of information. The main themes identified were those that were located within the data from interviews, documents, and observation.

4.6 Conclusion

The method that I used in this research was applied Participatory Rural Appraisal (PRA), which comprises mixed qualitative methods that enable research participants to share their perspectives. Participatory research methods enabled me, as an outsider, to gain in-depth information about Indigenous hill tribe communities' livelihood strategies and their environmental management practices. Using a range of PRA methods also provided supplementary data in relation to the development of community-based ecotourism (CBE), community-based natural resource management, and the evolution of co-management initiatives. Between February 2012 and August 2012, the fieldwork was carried out in Doi Inthanon, Doi Suthep-Pui, and Ob-Luang National Parks, and in Chiang Mai city centre. Interviews were also conducted with national park officials, academics, and representatives of NGOs and tourism agencies. The use of PRA methods enabled me to gain more information of community members' experiences and opinions of their livelihood strategies and all activities related to environmental management practices. Qualitative methods were also employed as a part of PRA such as, interviews, observations and document analysis to gain in-depth data concerning participants' perceptions of natural resource management practices. During the data collection process, I also made a livelihood strategies profile of each household, drew and illustrated community maps with the community by using the GIS program, and outlined the seasonal calendar based on ethnic group, as other mediums for data collection. However, the implementation of PRA methods also presented challenges, as it

[10] Data and methodological triangulation refer to combining data from several sources and methods in order to construct useful information for data analysis.

was time demanding and proved difficult in integratimg the data from the fieldwork with the related literature. The process of obtaining approval and permission to conduct study in the national park areas also took longer time than I expected, so I had to re-arrange the visiting schedules for the selected villages and also some interviews with several groups of research participants.

The DSLF was used as a guideline for generating interview questions and was then applied as an analytical tool in this study. A total of 116 research participants was interviewed by using different sets of semi-structured interview questions (see Appendix 6) in order to gain insights into the livelihood strategies and environmental management practices among the participating Indigenous hill tribe communities in this study. Data were analysed to gain greater understanding of livelihood strategies and environmental management practices among the Indigenous communities residing in Northern Thailand's national parks. In this study, methodological triangulation was used to combine data sourced using the various techniques. At the beginning of data management and analysis, both a manual method of QDA and the NVivo programme were employed. During the final stage, I found that the manual methods of QDA were more suitable for data collection and saved time. For data integration and analysis, I employed data and methodological triangulation to enhance the comprehensiveness and validity of the data. The next chapter provides a description of the case study sites and the characteristics of the participating Indigenous communities.

CHAPTER 5: RESEARCH CASE STUDIES

5.1 Introduction

The preceding chapter presented the details of research methods employed in this study. The purpose of this chapter is to describe the characteristics of the participating communities and to provide an overview of case study sites. The three selected national parks are located in Chiang Mai province (illustrated in Figure 5.1). They were established at different times: Doi Inthanon National Park in 1972; Doi Suthep-Pui National Park in 1981; and Ob Luang National Park in 1991. Since the establishment of these parks, the Indigenous hill tribe people within them have had differing experiences with national park management and development interventions. They have also faced different livelihood challenges and development intervention opportunities. Consequently, they have both similar and disparate perceptions of the impacts of the national park establishment and its management, including their experiences of development practices, community-based ecotourism and other conservation activities.

This chapter comprises six sections, including this introduction. The following section provides an overview of the characteristics of hill tribes in the Pga k'nyau and Hmong people. The remaining sections describe the national parks, and the six villages studied. The last section is a conclusion to the chapter.

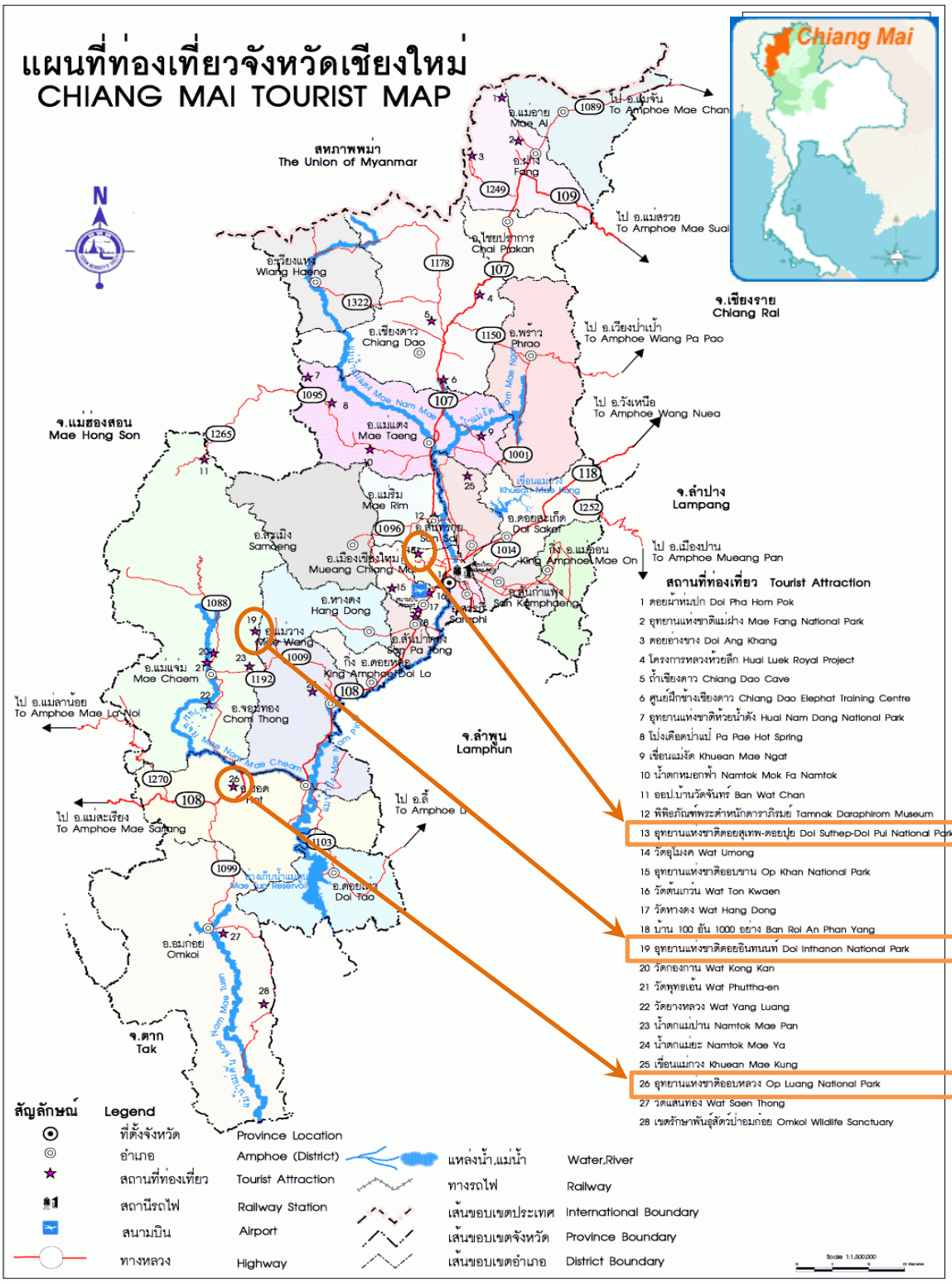

Figure 5.1 The Location of the Three Selected National Parks.
Source: Tourism Authority of Thailand (2015).

5.2 Overview of Participating Hill Tribe Communities

Within the three selected national parks, three Pga k'nyau and three Hmong villages were recruited as case study sites. The study tribes display unique regional characteristics in terms of culture, lifestyle, religion, language, art and dress code. This section provides an overview of Pga k'nyau and Hmong people's characteristics as provisional information to enhance understanding of their livelihoods and their relationships with nature, and their potential.

5.2.1 Background of Pga k'nyau Communities

Origins

The origin of Pga k'nyau people remains unclear and there is little written evidence of their original homeland and what were the reasons for their migration. As explained in Chapter 2, the Pga k'nyau are one of four cultural groups comprising the Kariang people who moved into Thailand at the end of the eighteenth century (McKinnon, 1998). Much of the literature indicates that the Pga K'nyau people are a part of the major ethnic group named "Kariang people" who used to live in Eastern Tibet, and then moved to Southern China around 3,300 years ago; some migrated to Myanmar about 200 years later (Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT) & Forest Peoples Programme (FPP), 2006; Laungaramsri, 2002b; McKinnon, 1998; Rashid & Walker, 1975; Winzeler, 2011). They were then forced to move and leave their lands after military defeat and some of those Kariang people then migrated from Myanmar to the upland and forest areas of Northern and Western Thailand at the beginning of the nineteenth century. The term Kariang refers to the first migrants from Myanmar, as one majority group of the Indigenous hill tribe people who live in Chiang Mai (Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT) & Forest Peoples Programme (FPP), 2006).

Characteristics of Pga k'nyau People

The term 'Kariang' is referred to one majority of hill tribe people who mainly live within forested areas in Northern Thailand and their livelihood rely on traditional agricultural practice (McKinnon, 1998; M. Tomforde, 2003). This term also widely used by most Thai people to call this ethnic hill tribe group. Some Northern Thai people call them '*Yang*' (McKinnon, 1998; M. Tomforde, 2003). However, the other term used is 'Karen', which is

widely used instead of ‘Kariang’ or ‘Yang’, particularly in English documents and literature, and is also used in a wide range of international research (McKinnon, 1998).

In Northern Thailand, McKinnon (1998) categorised the Karen or ‘*Kariang*’ people who mainly live in Northern Thailand into four main groups as follows: 1) the Skaw Karen (Pga k’nyau); 2) the Pwo Karen (Pa-long); 3) the B’ghwe Karen (Ka-ya); and 4) the Tawng Ou Karen (Pa-O). In Chiang Mai, the largest population of Karen is the Skaw Karen (Pga k’nyau). He also explained that the Pwo Karen, B’ghwe, and Pa-O live in Chiang Rai and Mae Hong Son provinces, respectively, but some live in Chiang Mai.

Figure 5.2 Pga k’nyau Women from Baan Mae Klang Luang Village.

The Karen or *Kariang* communities who participated in this research prefer to be called “Pga k’nyau” (pronounced *Pa-Ka-Ka-Yoa*), which means “children or people of the forest” rather than Karen as in English literature or Kariang, as Thai people call them. Pga k’nyau people’s livelihoods, rituals, and cultures rely on the availability of natural resources in the forest from the time they are born until they die (McKinnon, 1998; M. Tomforde, 2003). In this study, three Pga k’nyau villages were selected to be a part of case study sites. Figure 5.2 and 5.3 present the dress code characteristics of Pga k’nyau women and men.

Figure 5.3 Pga k'nyau Men from Baan Pa Hmoon Village.

The Pga k'nyau people are skilful in making traps for hunting and fishing, which were popular livelihood activities before the establishment of the national parks (Chiengthong, 2003; Rashid & Walker, 1975). In Northern Thailand, the permanent settlements of the Pga k'nyau people are usually in the forest areas, near to watershed areas and at a lower elevation (approximately below 1,000m ASL) than the Hmong people (McKinnon, 1998).

Language

The Pga k'nyau language originates from the Sino-Tibetan group of languages (McKinnon, 1998) whilst the written language was developed by missionaries (Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT) & Forest Peoples Programme (FPP), 2006). The two main written forms of the Pga k'nyau language consist of 'Likwa' (Burmese alphabet), which is related to the Protestant missionaries, and '*Liromae*' (Roman alphabet), which comes from the Roman Catholic missionaries. The Thai alphabet is not used in the Pga k'nyau language because Thai sounds are different to the Pga k'nyau language (*ibid*). Currently, the majority of Pga k'nyau people learn how to speak and write in Thai at the elementary schools in their villages that were established by Royal Projects and the Thai government.

Social Structure

In the context of a Pga k'nyau people, the '*hi kho*' means the duty and responsibility of the head of the village, who has the most significant role in decision-making, conducting ritual ceremonies in each village (Santasombat, 2004). Santasombat (2004) expalained that the head of village who held '*hi kho*' role also has the role to negotiating and meeting with government official, in this research means national park authorities. He also described that the role of *hi kho* can be transferred within the same family line (for example, from father to son). According to administrative systems in the Pga k'nyau communities, the main responsibilities of *hi kho* encompass the implementation of community rules, management systems and disciplinary matters. Santasombat (2004) described the punishment methods that have been chosen and implemented by community leaders and committees based on each situation and the use of community rules. However, he noted that in some cases, a guilty person will be referred to the country's legal system and dealt with through the courts. Santasombat stated that the Pga k'nyau communities hold community elections to select the new park official of the village, assistants, and village committee and are a significant part of *hi kho* systems in the villages every four years. In each community, the village park official and village committees also have their responsibilities as liaisons (or contact persons) to work with the government (Santasombat, 2004). The park official of the village also plays an important administrative role and sometimes has to rule on conflicts that occur within the village, and also between villagers and government officials (McKinnon, 1998; Tribal Research Institute, n.d.).

Family Structures

Pga k'nyau kinship follows a matrilineal system that relates to their belief that the house belongs to the mother's line (McKinnon, 1998). Thus, when the mother dies, the house is destroyed and a new one is built. The smallest unit of the community is typically a nuclear family consisting of a husband and wife and their unmarried children (McKinnon, 1998; Tribal Research Institute, n.d.). Pga k'nyau families are monogamous and divorce seldom happens because they believe that remarriage is disrespectful to the first wife or husband who will be impacted in the afterlife (McKinnon, 1998). Adultery and premarital sex are forbidden in Pga k'nyau society.

In traditional Pga k'nyau culture, wealth cannot be measured in terms of money, but in terms of livestock and rice supply (McKinnon, 1998). Parents commonly give their children equal inheritances through family agreement (namely, land, livestock, money and tools). However, if an agreement cannot be made within the family, the park official of the village will consider the case and then make the final decision (McKinnon, 1998).

Property Rights

According to Pga k'nyau customary land rights, all uncultivated lands within community areas are defined as village property. Villagers are only allowed to clear new cultivation areas with the permission of the park official of the community (McKinnon, 1998; Tribal Research Institute, n.d.). When harvesting is finished, cultivated areas are returned to fallow land to prepare it for the next cultivation. Residential, agricultural, and fallow lands are allocated within a community for each household and next generations have rights to inherit their households' lands from their parents (McKinnon, 1998; Tribal Research Institute, n.d.). Slash-and-burn cultivation (so-called swiddening practice) have been employed among many Pga K'nyau communities on communally shared land within their land areas. Some have also utilised their traditional knowledge of agricultural practices to make rice terraces to prevent soil erosion, and which are individually owned by each household (Rashid, 1975; McKinnon, 1998). However, traditional agricultural practices have been replaced by organic farming systems and slash-and-burn cultivation has been prohibited under national park regulations (Laungaramsri, 2002b). Under national park administration, zoning systems have been used to control the land use of hill tribe communities within the national parks. This means that customary land use systems have also had to change and agricultural lands have been limited (Laungaramsri, 2002b).

Culture and Beliefs

The Pga k'nyau people's culture and beliefs are well documented by Keyes, 1995; and McKinnon, 1998. They explain that the Pga k'nyau people believe that everything, such as, water, trees, and forests, has its own spirit – either good or bad. The most important spirits are the ancestral spirits of their grandparents and great-grandparents. The ancestral and good spirits will protect only those who have good minds and are well behaved. To show respect to their ancestral spirits, the Pga k'nyau people hold a traditional ceremony called '*aw khae*' by offering pigs and chickens to their ancestral spirits to protect them and their families. In

addition, they take part in '*Chae toe sii*', whereby plants are grown on their ancestors' graves. They believe that this ceremony will bring good fortune to their families. These ceremonies do not only show respect for their loved ancestors, but also to the spirits of the land, water, and forest, as ways of protecting themselves from harmful influences. However, some Pga k'nyau people do not strictly hold to these traditional practices.

In addition to the foundations of the Pga k'nyau faith, they also believe in the '*Ta Thi Ta Toh*' (the lord of moral principles), which has *'Ta thi ta te a'* (all good and bad behaviour). The *Ta Thi Ta Toh* will judge and punish them according to their behaviour. In addition, the Pga k'nyau people believe that everything has a soul or spirit (*kala/ k'la*), including humans, animals, plants, and even some inanimate objects. The Pga k'nyau people apply this principle to daily life, and in particular to natural resource management and conservation.

Santasombat (2004) explained that Buddhism and Christianity were introduced to several Pga k'nyau villages for many centuries. The foundational beliefs of Buddhism are similar to the traditional Pga k'nyau beliefs and rituals, and Buddhists too pray to the spirits about caring for their ancestor's spirits (*aw Khae*). However, when Christian missionaries introduced Christianity into the Pga k'nyau villages in Northern Thailand, many young people converted to Christianity. As a result, some rituals disappeared and a degree of cultural erosion ensued (Keyes, 1995; McKinnon, 1998; Santasombat, 2004).

5.2.2 Background of the Hmong Communities

Origins

The ancestors of the Hmong people came from China and migrated to Northern Thailand during the late nineteenth century (Geddes, 1976; McKinnon, 1998). The term 'Hmong', means 'free man' (Jaafar, 1975; Pake, 1987). Thai people often call them '*Meo*', but it is unclear how this word came about (Jaafar, 1975). The Hmong commonly reside in upland and forest areas at altitudes over 1,000m ASL near watershed areas (Jaafar, 1975; McKinnon, 1998; Tribal Research Institute, n.d.).

In the past, the Hmong cultivated opium for family usage as a medicinal plant for pain relief (Pake, 1987). T he altitude of Northern Thailand's mountainous areas is about 900 to 1000 m above sea level, so it is suitable for the cultivation of the opium poppy (Anderson, 1993). Anderson (1993) also noted that opium has been considered an illegal plant by the Thai

government since the 1960s. Thus, the Hmong had to stop cultivating opium poppies and changed to growing upland rice and other cash crops for food and sale (Anderson, 1993; Tribal Research Institute, n.d.).

According to McKinnon (1998), the Hmong people in Thailand can be divided into three groups: Hmong Ntsuab (Figure 5.4), Hmong Dawb and Hmong Quas Npab. The Hmong Ntsuab are well-recognized as the Green Hmong or Blue Hmong. Their clothing has outstanding characteristics. Women wear handmade embroidered skirts, which are decorated with blue-green batik designs (the symbol of this group). The men wear long black pants with embroidery along the cuffs, an embroidered indigo belt (siv liab), and a long-sleeved shirt with embroidery along the sleeves. The men's shirt is short, and the right panel crosses over the left, with embroidery along the bottom. The Hmong Dawb is known as the White Hmong. An outstanding characteristic of the White Hmong dress is the white skirts that the women wear. The men wear flared pants similar to those worn by the Chinese. Apart from their white and black skirts, the women may wear pants similar to the men's. 'Hmong Quas Npab' means the Hmong with flared or striped sleeves. The men dress similarly to the White Hmong. The women wear blouses which are decorated with wide stripes from the shoulders to the wrists.

Language

The classification of the Hmong language has been a subject of debate. Previously, it was classified as belonging to the Sino-Tibetan group but, more recently, it has been re-classified as part of the Austro-Thai linguistic group and the Miao or so-called Meo-Yao family instead (Geddes, 1976; McKinnon, 1998). Currently, the Hmong people learn to speak and write in Thai because they have the opportunity to study within the Thai education system provided at elementary schools in proximity to their villages. These schools were established through Royal Projects and government development initiatives.


Figure 5.4 Ntsuab Hmong Dressed for the Hmong New Year.

Social Structure

According to Geddes (1976) and McKinnon (1998), the Hmong have adopted both official and traditional structures of community systems. They describe the official structure as similar to the Thai village system, and they have elections every four years to select the park official of the community. The main duty of the park official of the village is administration and he/she has a role in contacting the sub-district administrative office. Traditional community structures consist of three levels, the family unit, the clan unit and the village. The patrilineal clan system ties together larger groups, and each of the clans has its own traditions (Huang & Sumrongthong, 2004). In general, the patrilineal clan system involves the sharing of inheritance, property, names, and titles through the male line or father's line (Benokraitis, 2011). The clan level is used among the Hmong, where people of the same clan have the same last name. This clan structure governs social behaviour on political, economic and religious levels (Geddes, 1976; McKinnon, 1998). In each village, the administrative and governance systems involve the participation of the villagers and the collaborative decision-making processes of the clans, particularly in community development.

Livelihood Practices and Adaptation

McCaskill (1997) explained how the Hmong people prefer to live in the upland areas (1,000m ASL and above) where they employ traditional slash-and-burn practices (Fisher & Hirsch, 2008). Due to economic development pressures, the Hmong people have employed a

wide range of livelihood strategies, including cash crop cultivation, community-based tourism activities, handicraft making, and souvenir shops to increase their household incomes.

However, the potential to expand agricultural lands is limited due to national park regulations (Buergin, 2000; Roth, 2008). In terms of land tenure within a village, the Hmong understand that the first person to clear the land receives complete rights to the land (Geddes, 1976; Tomforde, 2003). Tomforde (2003), explained that cleared land within the village can be rented, sold, donated, and mortgaged to community members. However, if the land is left unused and/or the landowner moves out or passes away, the land rights are lost. In the village, uncultivated lands belong to the park official of the village, who is a senior clan member or clan leader. However, competition for land can lead to conflict (M. Tomforde, 2003).

Culture and Beliefs

The Hmong people have traditional beliefs and rules that govern their morality and behaviour (Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT) & Forest Peoples Programme (FPP), 2006). The Hmong people strongly believe that spirits of everything can be found everywhere, for example, House spirits (‘*dad Klua hauv vaj tse’*); Ancestral spirits (‘*puj yamn txwv koob*’); Power of creation (‘*Yawn Saub’*); Shaman (healer) spirits (‘*txiv neeb*’); and Malicious spirits that include the other natural spirits (‘*yawn txwv nyoog’*). High trees are important spirits to the Hmong people as ‘the spirits of the high’ for protecting them from bad weather (Anderson, 1993; Huang & Sumrongthong, 2004; Jaafar, 1975). Additionally, the Hmong people have often worshipped their ancestral spirits because they believed that the spirits of their ancestors can protect them and their families from bad things (Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT) & Forest Peoples Programme (FPP), 2006). There are two kinds of spirits based on the Hmong’s beliefs, the benevolent spirits (also known as the caring spirits) and these include ancestral, shaman, and house spirits, and, the malicious spirits or demon spirits that live in the forest, plains, valleys, and cities (Huang & Sumrongthong, 2004; Jaafar, 1975). Some Hmong people believe in the spirit of the lord of the land (as the place of settlement) and that this spirit can protect them and their villages (Huang & Sumrongthong, 2004).

5.3 Background of Case Study Sites

The three national parks selected were Doi Inthanon, Doi Suthep-Pui, and Ob Luang National Park in Chiang Mai Province. These three national parks are home to Pga k'nyau and Hmong people who have had to revisit their livelihood strategies and environmental management practices in light of national park regulations and prohibitions.

5.3.1 Doi Inthanon National Park

The Doi Inthanon National Park consists of two mountains: Doi[11] Inthanon (the highest mountain peak of Thailand at 2,565m above sea level (ASL) and Doi Hua Mod Luang (at 2,330m ASL). These two mountains are part of the Thanon Thong Chai Mountain Range. This national park is widely known as 'the roof of Thailand' and is situated not far from the Mae Cheam district, being approximately 60 kilometres from the southern part of Chiang Mai City. Doi Inthanon National Park features a range of attractions, including nature trails and waterfalls (as shown in Figure 5.5). The weather is colder than in the other national parks in Chiang Mai province (Agar, 2006; Thiro *et al.*, 2002).

Doi Inthanon National Park was established in 1972 as Thailand's sixth national park and has a total area of 482 km^2 (Hvenegaard & Dearden, 1998b). There are three types of forests in this park: tropical evergreen forest, pine forest, and mixed deciduous forest. Conservation initiatives are essential for this national park because of the rich biodiversity of flora and fauna, including rare species (Cummings, 2002; Williams *et al.*, 2009). In this national park valuable tree species include *Xylia xylocarpa*, *Pterocarpus macrocapus*, *Dipterocarp sp.*[12], *Terminalia sp*., and *Lagerstroemia sp*. There are also rare flower species, such as, *Rhododendron sp*., orchids, *Vanda sp*., and *Phycastylis sp*. (Maxwell, 1998; Maxwell & Elliott, 2001; Pooma *et al.*, 2005; Santisuk *et al.*, 2006).

[11] '*Doi*' means mountainous area in the Thai language.
[12] sp. stands for species of flora and fauna.

Figure 5.5 Tourist Attractions in Doi Inthanon National Park.

Clockwise from top left: sign at the highest peak of Doi Inthanon mountain; the King and Queen Pagoda; a famous nature trail named '*Ang Ka'*; and one of the well-known waterfalls in Doi Inthanon National Park named '*Num Tok Mae Klang'*.

Moss and fern species, especially Sphagnum moss and Osmanda fern, are found inside the Ang Ka nature trails (Figure 5.6) (Maxwell, 1998; Pooma *et al.*, 2005). In this national park, two Pga k'nyau villages were selected as the case study sites; namely, Baan Hmong Doi-Pui and Baan Hmong Mae Sa Mai village (see Figure 5.7).

Figure 5.6 Some of the Flora Species within Doi Inthanon National Park.

L-R: Osmanda fern; Rhododendron; and Sphagnum moss.

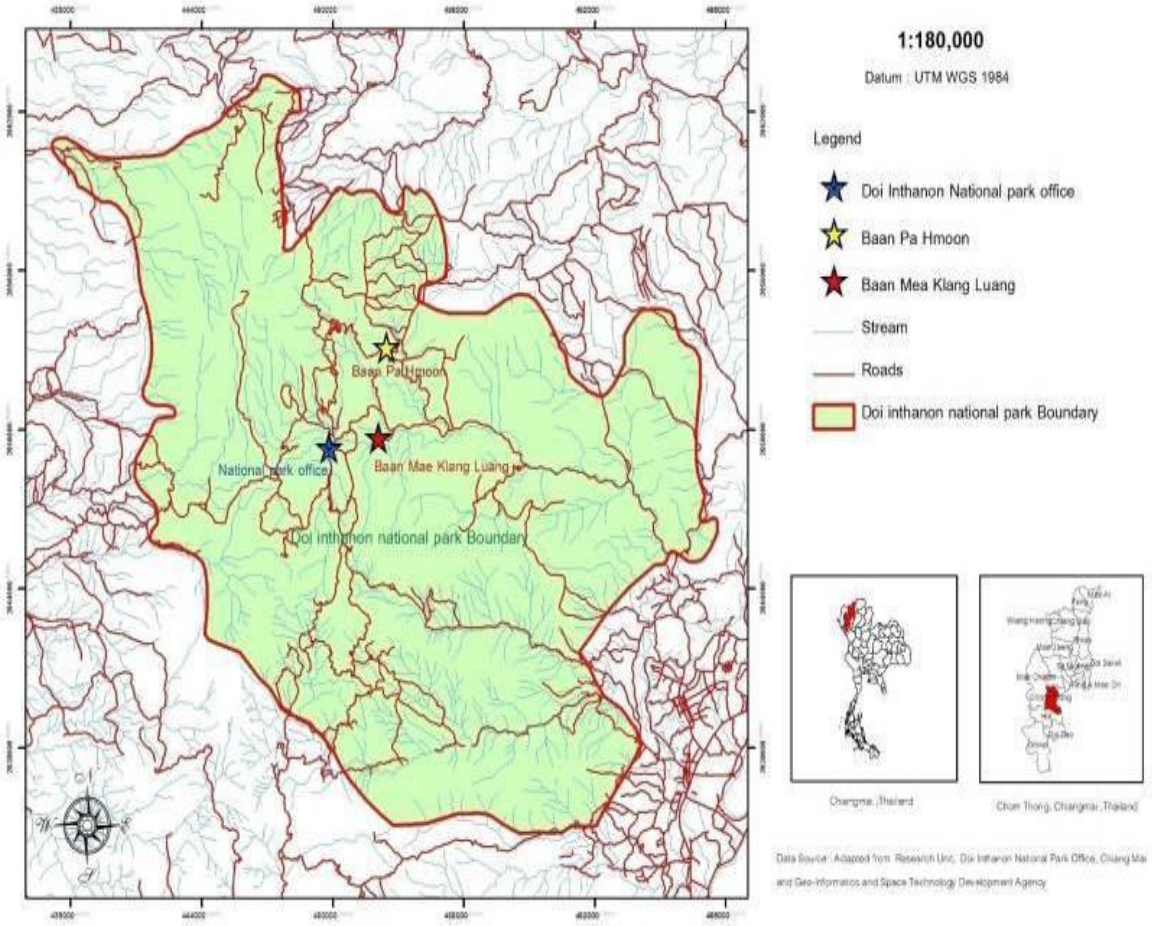

Figure 5.7 The Location of Baan Pa Hmoon and Baan Mae Klang Luang Villages in Doi Inthanon National Park.

Source: This map was created using data from the Research Unit, Doi Inthanon National Park Office, Chiang Mai, and the the Geo-Informatics and Space Technology Development Agency, Bangkok.

5.3.2 Doi Suthep-Pui National Park

Doi Suthep-Pui National Park is well known by domestic and international tourists (Cummings, 2002; Williams *et al.*, 2009). According to Cummings (2002) and Williams *et al.* (2009), the park is named after a well-known hermit who completed meditation for his enlightenment upon the mountain a thousand years ago. In 1981, Doi Suthep-Pui National Park was established as Thailand's 24th national park, with a total area of 261 km^2 (Cummings, 2002; Williams *et al.*, 2009). Four districts are included in the area: Mae Rim, Mae Taeng, Hang Dong, and Muang (Cummings, 2002; Williams *et al.*, 2009). This national park comprises three mountain peaks: Doi Suthep, Doi Buakha, and Doi Pui. The highest peak is Doi Pui (1,685 m ASL), followed by Doi Suthep (1,676m ASL) (Cummings, 2002; Williams *et al.*, 2009).

Doi Suthep-Pui National Park is located in the Thanon Thong Chai mountain range on the western side of Chiang Mai Province. This mountain range is also part the Phi Pan Nam mountain range (Cummings, 2002; Williams *et al.*, 2009). The Phi Pan Nam mountain range is the original points of three streams: Huay Keaw, Huay Chang Khian, and Huay Mae Hia. These three streams are all tributaries of the Mae Ping River, which is known as a significant river in Chiang Mai Province and the upper part of Northern Thailand. The average temperature in this national park is around 16 degrees Celsius (Cummings, 2002; Williams *et al.*, 2009).

This national park has many beautiful natural landscapes and nature trails (Cummings, 2002; Williams *et al.*, 2009). The nature trails are popular for biodiversity education and ecotourism activities, such as bird watching, hill trekking, and elephant riding (Lekagul & Round, 1991; C. Robson, 2002). Doi Suthep-Pui National Park has been promoted as the premier nature-based tourism destination since 1998. It features famous tourist destinations such as Wat[13] Phra That Doi Suthep and the Khru Ba Sri Vichai Monument (Figure 5.8) (Muangyai & Lieorungruang, 2008). The Khru Ba Sri Vichai Monument is a well-known sacred place for locals and tourists and is located near the Huay Keaw waterfall. This monument was built to commemorate Khru Ba Sri Vichai, a Buddhist monk who led local people to establish the 12 kilometres of historical uphill road to Wat Phra That Doi Suthep Temple in 1934 (Muangyai & Lieorungruang, 2008).

Figure 5.8 Landmarks and Heritage Sites of Doi Suthep Pui National Park.

L-R: The Wat Phra That Doi Suthep temple; and the Naka Staircase to Wat Phra That Doi Suthep

[13] '*Wat*' means 'temple' in Thai.

Other famous tourist destinations include Bhubing Palace, Mon Tha Tarn Waterfall, Mae Sa Elephant Camp, Queen Sirikit Botanic Garden, and Baan Hmong Doi Pui village (Figure 5.9) (Muangyai & Lieorungruang, 2008).

Figure 5.9 Tourist Attractions in Doi Suthep Pui National Park.

Clockwise from top left: The Bhubing Palace; The Mae Sa Elephant Camp; The Queen Sirikit Botanic Garden; Baan Hmong Doi Pui village; a view of Baan Hmong Doi Pui village; and the Mon Tha Tarn Waterfall.

Doi Suthep-Pui National Park features a high level of biodiversity. Vegetation below 1,000 m ASL consists of dipterocarp deciduous forest and mixed deciduous forest, while coniferous forest and hill evergreen forest feature above 1,000 m ASL (Maxwell, 1998; Maxwell & Elliott, 2001). The diversity of common flora includes *Shorea obtusa*, *Shorea siamensis*, *Dipterocarpus obtusifoiius*, *Lagerstroemia tomentosa*, *Hopea odorata*, *Anisoptera costata*, and *Pinus Kesiya* (Maxwell, 1998; Maxwell & Elliott, 2001). Common tree families are *Dipterocarpaceae*, *Fagaceae*, and *Magnoliaceae* (Maxwell, 1998; Maxwell & Elliott, 2001). Common wildlife includes, wild boar, macaque, and other small mammals. Different types of birds are also common, such as, the red jungle fowl, pheasants, eagles, parrots, and bulbuls (Hvenegaard, 1996). Doi Suthep-Pui National Park is also one of only four protected areas in Thailand where rare amphibian species like the salamander can be found (Hvenegaard, 1996; Lekagul & Round, 1991). In this national park, two Hmong villages were selected as the case study sites: Baan Hmong Doi-Pui and Baan Hmong Mae Sa Mai (see Figure 5.11).

Figure 5.10 Common Tree Species in Doi Suthep-Pui National Park.

L-R: *Dipterocarpus obtusifoiius*; *Pinus Kesiya*; and *Lagerstroemia tomentosa*.

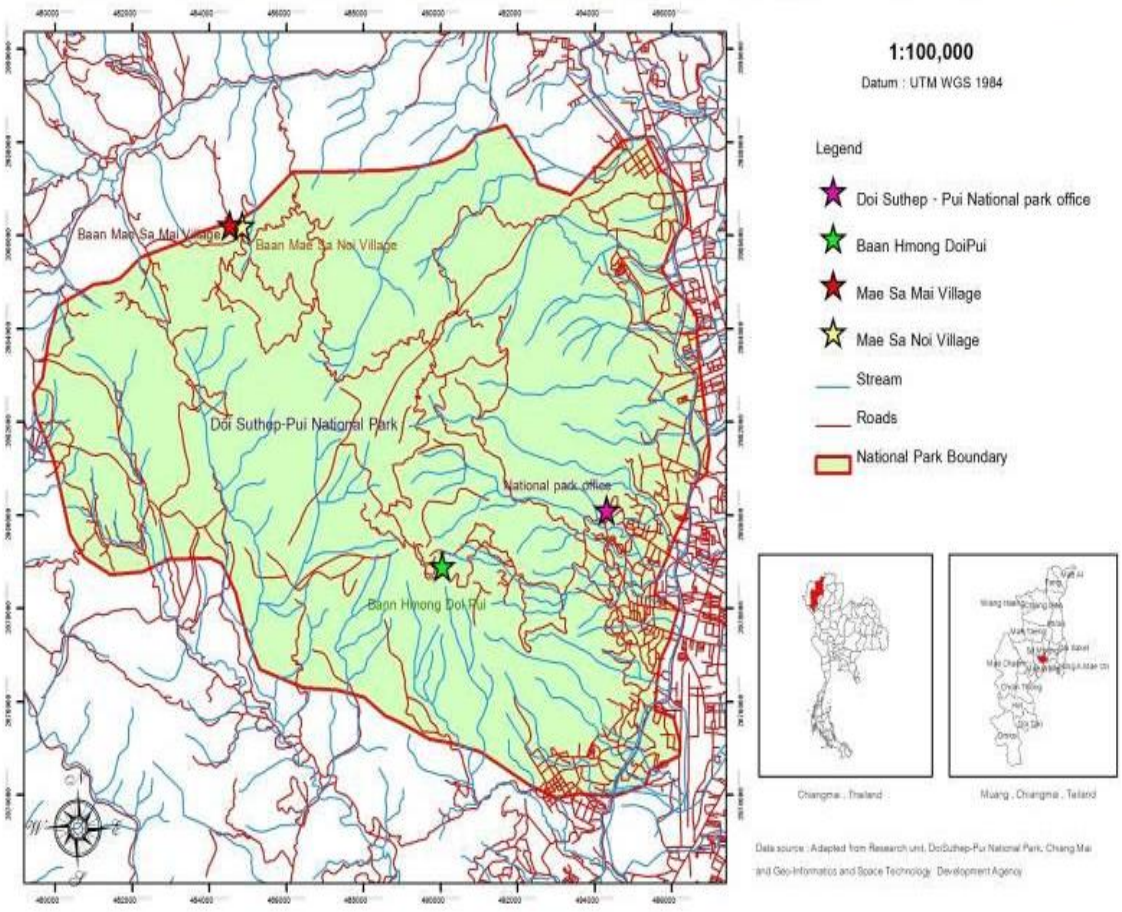

Figure 5.11 The Location of Baan Mae Sa Mai and Baan Hmong Doi Pui Villages in Doi Suthep-Pui National Park.

Source: This map was created using data from the Research Unit, Doi Suthep-Pui National Park Office, Chiang Mai, and the the Geo-Informatics and Space Technology Development Agency, Bangkok.

5.3.3 Ob Luang National Park

The Ob Luang National Park is located South-West of Chiang Mai city centre (Cummings, 2002; Williams *et al.*, 2009). Its boundaries are adjacent to Doi Inthanon National Park (Cummings, 2002; Williams *et al.*, 2009). This national park encompasses the Mae Chaem watershed, including the Mae Chaem River and its tributary streams that flow to the Mae Ping River in Chiang Mai Province (Cummings, 2002; Williams *et al.*, 2009). Within this park, the water current of the Mae Chaem River is also called '*Num Sa Lak Hin*' (which means, in Thai, 'strong water current which shaped the land and created the big gorge') (see Figure 5.12). The big gorge of this park is called '*Ob Luang*' in Thai (Cummings, 2002; Williams *et al.*, 2009).

Figure 5.12 Tourist Attractions in Ob Luang National Park

L-R: Walkway to the Ob Luang Gorge; Mae Cheam River tributary and Ob Luang Gorge; and the Mae Tear Waterfall.

Between 1966 and 1990, this national park was initially managed as a forest park in order to protect the remaining forest (Nabangchang, 2011). In 1991, the RFD established this park as Thailand's 68th national park (Nabangchang, 2011). The total area of the park is 630 km2, which covers three districts of Chiang Mai, namely, Chomthong, Hod, and Mae Chaem (Cummings, 2002; Williams *et al.*, 2009). The Mae Tear Waterfalls, Ob Luang Gorge, and walkway to the bridge are famous tourist attractions, as shown in Figure 5.12. In this national park, two hill tribe villages were selected as the case study sites namely, Baan Huay Ka Noon village and Baan Pa Kluay village (see Figure 5.13).

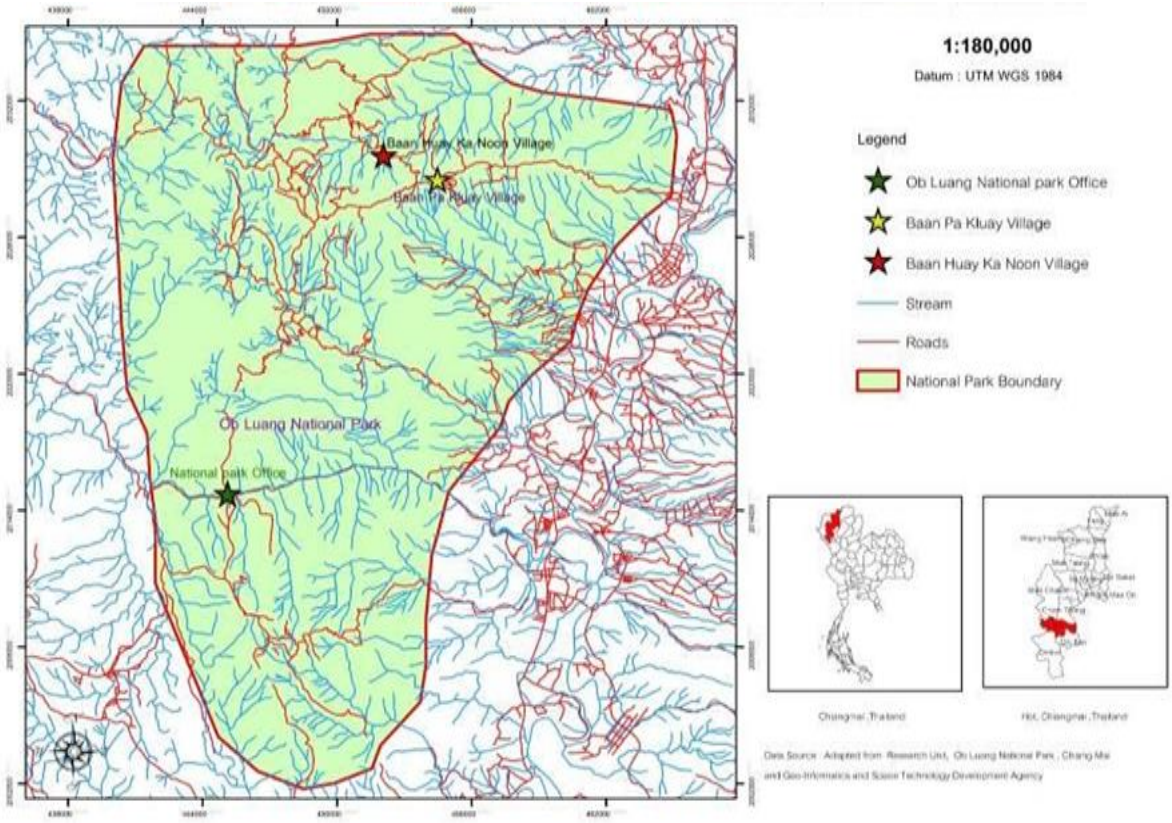

Figure 5.13 The Location of Baan Huay Ka Noon and Baan Pa Kluay Villages in Ob Luang National Park.

Source: This map was created using data from the Research Unit, Ob Luang National Park Office, Chiang Mai, and the the Geo-Informatics and Space Technology Development Agency, Bangkok.

5.4 Conclusion

The three selected national parks were established in different decades: Doi Inthanon National Park was established in 1972; Doi Suthep-Pui National Park in 1981; and Ob Luang National Park in 1991. This also made the Indigenous hill tribe communities face different experiences in relation to national park management and development interventions. This chapter summarised information about the three national parks, which are the locations of the participating communities in this study. This chapter also described the characteristics of the Pga k'nyau and Hmong people, as they were the research participants in this study. Many Indigenous hill tribe communities are settled in the landscape of Northern Thailand that features forested, mountainous areas and watershed areas that embrace a diversity of plant and wildlife species (Cummings, 2002; Kunstadter, 1988). The livelihoods of these communities are varied and are related to culture and beliefs. Therefore, the availability and accessibility of natural resources is crucial for sustaining the livelihoods of the Indigenous hill tribe communities. Prior to the development of these areas as national parks, the

Indigenous communities in Thailand utilised their ecological knowledge of the natural resources to live sustainably in forest areas. However, since the establishment of national parks by external agencies, there have been unavoidable external influences and conservation policies imposed on these communities. As a result, these communities have needed to adapt their livelihood strategies and develop their environmental practices under national park regulations and land use restrictions. The next chapter presents the results of the livelihood strategies and environmental management practices employed in the three Pga K'n yau and three Hmong villages, which were selected as case study sites.

CHAPTER 6: RESULTS FROM THE CASE STUDIES

6.1 Introduction

Chapter 5 described the characteristics of the Pga k'nyau and Hmong people who participated in this study, and provided an overview and description of the three selected national parks, along with descriptions and location of the three Pga k'nyau and three Hmong villages selected as case studies. The DSLF was used as an analytical tool to assess livelihood strategies and environmental management practices employed by each village, as described in Chapter 4. Research findings in this chapter will be presented in terms of the key DSLF components of vulnerability contexts (shocks, trends and seasonality); livelihood resources (natural, human, social, financial and physical capital); transforming processes and structures of conservation policies; and the development of national management practices, livelihood strategies, and livelihood outcomes.

This chapter covers all six villages equally to present the research findings. The purpose of this chapter is to identify the livelihood strategies and environmental management practices employed in the three Hmong villages and three Pga k'nyau villages within three of Northern Thailand's national parks. The research findings were gathered from two Pga k'nyau villages (Baan Mae Klang Luang and Baan Pa Hmoon) in Doi Inthanon National Park; one Pga k'nyau village (Baan Huay Ka Noon) and one Hmong village (Baan Pa Kluay Village) in Ob Luang National Park; and two Hmong villages (Baan Hmong Doi Pui and Baan Hmong Mae Sa Mai Village) in Doi Suthep-Pui National Park. An analysis of access to livelihood assets is based on the interview data, document analysis, and field surveys. In each village, the park official of the village, village committees, and community members shared their experiences and perceptions of the impacts of the national park management on their livelihoods through the interviews. They also explained how and why they adapted their livelihood strategies and environmental management practices. The gathered data in each village was also supplemented by other Participatory Rural Appraisal (PRA) methods. Interviews were also conducted with government officials, academics, and representatives from non-government organisations and tourism agencies. These interviews aimed to gain more extensive data on how the villages were involved in co-management initiatives and livelihood development projects to support their sustainable livelihoods.

Chapter 6 consists of six sections, including the introduction and the conclusion. Section 6.2 presents the village vulnerability contexts (e.g. shocks, trends and seasonality) as explained by community members and the park officials of each village. To deal with these vulnabilities, the villlages have needed to continually develop their livelihood strategies and engage in community-based conservation. They also participate in co-management initiatives to strengthen their natural and social capital, which is explained in Sections 6.3 and 6.4. Section 6.3 provides the results in terms of the five livelihood resources as stated in the DSLF: natural, social, human, financial and physical capital respectively. Section 6.4 also describes the transformational processes and structures of national park mangement systems and conservation policies, including the details of environmental management practices employed in the six case study sites. These transforming processes and structures relate to the ways the villages have developed their livelihoods in relation to agriculture practices and community-based conservation, and participated in co-management initiatives. Section 6.5 explains the current state of livelihood strategies and outcomes in these three villages. Section 6.6 provides the conclusion of this chapter in order to highlight the research fidings.

6.2 Vulnerability Contexts of the Case Study Communities

The vulnerability contexts described within the DSLF refers to shocks, trends and seasonality as external factors, which affect the six villages. The people in the villages have also adapted their livelihood strategies and environmental management practices to comply with the regulations of national parks. Across the interviews with community members, there were similar views on the impacts of national park management as creating both constraints to, and opportunities for, their livelihoods. The implementation of national park regulations and land use restrictions can therefore be seen as influences that led to significant changes to communities' livelihood strategies and their environmental management practices.

Shocks

The initial stage of national park establishment created rapid and dramatic changes of land use through the restictions imposed. Many community members expressed concerns about how these changes had happened and what had been lost through the establishment of the national parks. This was particularly so in relation to the immediate prohibition of access to collect edible plants, non-timber products, and timber products within the protected forest areas. Some discussed their sense of loss of food security and the limited land areas available

for agricultural practices. Many of the villagers explained that after their villages were incorporated into the national parks, they had to change customary livelihood strategies and develop new strategies to sustain their lifestyle and socio-economic well-being, as well as to comply with national park regulations.

> Initially, this national park [Doi Inthanon National Park] was announced and established [in 1972] National parks officials came here once... without warning, they [forestry or national park officials] came into our village and told us that the area of this village was confined within the boundaries of the national park… our village had an invisible fence that limited the size of village… [Community member, Doi Inthanon National Park].

> It was so sudden that national parks cover our land and then we have had to change our livelihoods in order to comply with the regulations of national parks… [Community member, Doi Inthanon National Park].

Many of the research participants mentioned that the shocks happened suddenly because of the rapid establishment of the national parks that incorporated their villages.

> since this national park was established, the access to protected forest areas is prohibited… Villagers cannot go against this regulation because they said it was illegal, and that villagers could be punished with jail or fined [Community member, Baan Mae Klang Luang village, Doi Inthanon National Park].

> The access to the protected forest is prohibited since the park was established… However, many years ago, one community member was arrested in the forest because he would like to gather mushrooms and herbs… After that, he was sent to jail for many months because he could not pay fine… quite alot money... Since then, it is the responsibility of the Park official of village was to warn community members in every community meeting [Community member, Baan Pa Hmoon village, Doi Inthanon National Park].

> When this national park [Doi Suthep-Pui] was established [in 1981], national park authories came to our village to survey and told us to stop our access to the protected forest. They commanded that we should stay only within the boundaries of the community village… [Community member, Baan Hmong Doi Pui village, Doi Suthep-Pui National Park].

> Everything changed so fast… However, we had to accept and adapt our livelihoods in order to comply with the regulations of national parks… [Community member, Baan Hmong Doi Pui village, Doi Suthep-Pui National Park].

Many community members explained that they had lost their land rights, and that their traditional access to some forest areas were immediately prohibited when national parks were created. Thus, many interviewed participants in this study expressed the view that they had

no choice but to follow national park regulations, including the implementation of land use restrictions and zoning systems.

> Using the zoning system of the national park, villagers cannot access to the protected forest areas… Fortunately, we can carry out our rituals in our sacred forest nearby our village [Community leader, Baan Pa Hmoon village, Doi Inthanon National Park].

As a result of the park zoning system, customary access to forest areas has changed so that villagers now have to grow their own trees in order to have firewood during winter. However, they can still access their sacred forest (part of their community forest) to continue cultural rituals. They have also set-up their own rules similar to those used for the park to protect their sacred forest, which is essential for their well-being.

> To protect our forest areas, including our land and water, our Park official of the village set the rules of village such as do not cut trees and kill animals within the sacred and protected areas. We planted our fruit trees such Longan and Lynchee, when winter time approaches, we have had to cut our old fruit trees for our firewood. Sometimes, cutting our fruit trees enables us to build our house, rice barn and use as firewood for cooking [Community member, Baan Pa Hmoon village, Doi Inthannon National Park].

Whilst emigration from the villages had become one solution to balance consumption and production, other groups changed their traditional practices to provide sufficient food for their communities. This happened when the expansion of national park areas confined the areas available to Indigenous communities by prohibiting access to customary natural resources and limiting agricultural areas. One community member explained that villagers had to adapt livelihood strategies because hunting and gathering, both of timber and non-timber products, were prohibited:

> We have had to adapt our livelihood strategies to comply the national park regulations…These regulations prohibited us to access in the protected forest areas of the national parks…So, our village had invisible boundaries to limit our community areas and protected areas…Our animal hunting and edible plant collecting in the protected areas are prohibited…Then the agriculture becomes of greater importance for our subsistence livelihood for our food [Community member, Baan Hmong Doi-Pui village, Doi Suthep-Pui National Park].

While Baan Pa Kluay village increased agriculture to meet the needs created by the hunting grounds they had lost in Ob Luang National Park, the implementation of national park regulations in the 1990s limited the village's agricultural land, and this created great concern as seasonal and climatic changes were already impacting on what they could grow.

> To comply with the national park's regulations, we are prohibited from accessing plants and hunting animals in protected areas… .We had to learn how to live with the changes and had to adapt to sustain our livelihoods. Our food and products came from agriculture and animal husbandry. We have to work harder in the field and the only thing that we pray for is to have enough food throughout the year [Community member, Baan Pa Kluay village, Ob Luang National Park].

The expansion of agricultural areas in the protected forest is prohibited. Accordingly, the park official of Ob Luang National Park told me that the Indigenous hill tribe communities should follow national park regulations and, thus, they should not expand into the protected forest areas:

> I found that sometimes the villagers did not follow the national park regulations and continued to expand their agricultural areas into the conservation areas. Thus, officers have had to warn and explain to them about the national parks' regulations and penalties. Thus, they should stop extending the agricultural areas into the protected areas [Park official, Ob Luang National Park].

In addition, the park official of Doi Suthep-Pui made the following statement:

> I think that all villagers who live in the National Parks areas should understand the National Parks regulations….So, if they understand…they should not expand their agricultural areas into the protected forest areas. They should participate in conservation activities. They should protect the forest [Park official, Doi Suthep-Pui National Park].

In this interview, the use of the phrase 'should understand' means that they should comply with national park regulations as part of their obligations for living within the national parks. Some interviewees explained that they have had to participate in conservation projects that were introduced by national park officials and external agencies because they would also like to protect the surrounding natural resources. Many villagers commented that their population growth has led to increasing demand on their agricultural areas. Under national administration, they also face both opportunities for alternative livelihoods (such as, agricultural training by the RPF and (eco) tourism development) and constraints (such as, land use limitations). Due to land use restrictions and zoning systems, they are unable to expand agricultural areas to exceed the boundaries of their villages. To sustain their living, they have had to adapt their agricultural practices, such as, shortening the fallow period and abandoning rotational agriculture. This means that they may also face other challenge such as, soil erosion, which leads to the reduction of soil nutrients in the top soil and the loss of cash crop production, as also found in the study by Turkelboom and Van Keer (1996).

Many national park officials contend that the creation of national parks has been foundational to forest conservation and natural resource management. Consequently, Indigenous communities must also comply with the regulations that limit their access to customary forest resources in the protected areas.

> In Northern Thailand, the primary objective of establishment of National Parks is to conserve biodiversity and the remaining forest area. Currently, many Indigenous communities are allowed to live within the boundaries of national parks and protected forests, thus, they should comply with the laws and regulations [Senior academic staff member, Northern Thailand National Parks Research Centre, Chiang Mai].

However, the livelihoods of the Indigenous communities depend on the availability of natural resources as their natural capital. Thus, these different perspectives have led to conflicts of interest in relation to conservation and natural resource use. Yet, on the other hand, many of the conservationist non-governmental organisations (NGOs) in this study (IMPECT[14], SDF, FPP[15] and CARE) argue that the Indigenous communities should have opportunities to protect their surrounding forests and maintain their natural resources by developing community-based natural resource management (CBNRM) and community-based ecotourism (CBE).

> Many Indigenous communities live in the beautiful landscape of Northern Thailand' National Parks, which are promoted as a tourist destination. However, due to the limitations of community land areas, the Indigenous communities are seeking alternative livelihood strategies to support their sustainable livelihoods and household incomes while protecting the environment, such as community-based ecotourism [Senior staff member, SDF, Chiang Mai].

Trends

The gradually increasing population of the villages has created constraints on access to the limited natural resources available to each village. Due to limited community areas, the villages have adopted semi-commercial agriculture (subsistence and cash crop cultivation) as one of their livelihood strategies to increase household income. The demand for land for agriculture has increased along with the increasing population. Consequently, they have adopted more efficient agricultural techniques such as, organic farming and permaculture as permanent farming practices. Both study sites also use mono- and mixed-cash cropping

[14] IMPECT stands for the International Mountain People Education and Culture in Thailand Association that works with the hill tribe people with a focus on education, environment, and culture.

[15] The Forest Peoples Programme (FPP) was established in 1990 in response to creating strategies to reduce the problem of deforestation. This organisation was registered and founded as a non-human right, a part of Dutch Stichting in 1997, and as a UK charity in 2000.

cultivation. These cultivation techniques were introduced by the Royal Project Foundation (RPF), which also provides a variety of seeds (domestic, and international fruits and vegetables) and organic fertilisers from compost, along with a range of environmental management practices. At times, most villagers also cultivated edible plants in their backyard gardens for personal consumption.

In the case study sites, community-based ecotourism (CBE) has been promoted by the RPF and Tourism Authority of Thailand (TAT) since 1997. Since then, Baan Mae Klang Luang village has become well known for coffee products, and villagers sell their coffee products and handicrafts at CBE accommodation. This village offers a variety of accommodation for tourists, based on the number of tourists and visitors looking for accommodation, and their length of stay. Baan Pa Hmoon village is well known for its 'Pink eco-lodge' (pink colour), which is the only tourism building in the village. In Baan Huay Ka Noon village in Ob Luang National Park, villagers only employ semi-commercial agriculture. However, they have expressed the need for transport infrastructure development and improvement in the solar cell panel electricity supply to facilitate the development of CBE.

Within the Hmong villages, two (Baan Hmong Mae Sa Mai and Baan Hmong Doi Pui) have also developed community-based ecotourism (CBE). However, Baan Pa Kluay village in Ob Luang National Park relies on semi-commercial agriculture as they lack transport infrastructure and a reliable source of electricity. The CBE ventures were developed in Baan Hmong Mae Sa Mai and Baan Hmong Doi Pui Village through initial support by local and international organisations associated with natural resource management. Baan Hmong Doi Pui village is a very popular tourist destination and their CBE has developed along with cultural-based tourism, but it has resulted in negative environmental impacts due to overcrowding, especially during the high tourist season (December-January). This village is also known for its special cultural performance which it does every year. Also, there are many souvenir shops and a variety of restaurants including, traditional Hmong food. Therefore, tourists usually stop by for souvenir shopping, dining or even accommodation or community homestays. These activities are well known by both domestic and international tourists. During their stay, there are local tour guides (Hmong people) who take care of the tourists. Tourists can donate money to community development funds, which are overseen by the community committees. Baan Hmong Doi Pui village is located near many tourist attractions, including the Bhubing Palace (the winter residence of the royal family), which many tourists visit throughout the year. The villagers of Baan Hmong Doi Pui also produce

and sell souvenirs to tourists, including woven traditional customary clothes, bags and other handicrafts.

Baan Hmong Mae Sa Mai is well known as a research based area, where many researchers conduct studies on biodiversity. Additionally, a reforestation project supported by the Forest Restoration Unit (FORRU) has been launched here; notably, villagers have participated in planting trees every rainy season of the project. Also, every year, students come here for study and to participate in reforestation every year. This reforestation project has become a model for other communities. The outstanding biodiversity of this area is included in CBE, such as, in bird watching and forest trekking. Income gained from CBE including, accommodation and local guide services contribute to the community development fund.

Seasonality

Seasonal change causes fluctuations in the quality and a quantity of each community's agricultural products. This causes increased uncertainty in household incomes. There is a need for collaboration between communities and RPF to identify profitable and appropriate crops to sell in the local market, and training in mixed- cash crop agriculture and market skills are essential for village livelihood development. Pga k'nyau community members had also noted seasonal changes, and these changes further added to their anxieties around their loss of ability to access forest areas to collect fruit, water, and other resources as they had done traditionally. This was especially so, when they could also see that the new farming and gardening allowed under the regulations were not as productive as they needed:

> Over the last two years, we experienced a long drought period that produced less agricultural production than the other years. We had just enough for our household consumption and not had any surplus for selling in the local market. Thus, we had to get permission from the national parks official to set up a small water catchment area to ensure that we will have enough water for our agricultural areas in the following years [Pga k'nyau farmer, Baan Huay Ka Noon village, Ob Luang National Park].

> We experienced a long drought period around December to March in the last two years. Our agricultural products reduced and we then had less income. This year, we got approximately 3,000-4,000 Thai Baht [160-180 NZ] per month from selling fruit and vegetables. During drought periods in last two years, we got less than 2,000 Thai Baht [80 NZ] per month. We had to establish two small water catchment areas to keep water for planting our fruit trees and vegetables [Hmong farmer, Baan Hmong Mae Sa Mai village, Doi Suthep- Pui National Park].

Based on the above interview data, seasonal changes seriously affect the agricultural production of the Pga k'nyau and Hmong communities, particularly given the limitations of

their land area. Fluctuation in the market prices of agricultural products has also had significant impacts on their livelihoods. Moreover, problems of transportation infrastructure during the rainy seasons cause a loss of agricultural products through loss of access to markets and increasing investment costs to keep roads open. Inadequate information on agricultural market trends causes uncertainty and considerable fluctuations in household incomes, for example, by the oversupply of produce such as, cabbages - the price of which may drop to only 2-5 Baht (less than 15 cents of NZ) per kilogram in some seasons. An oversupply of carrots, which used to fetch 20 -30 Baht (around one New Zealand Dollar) can drop to 10 -15 Baht (around 50 cents of NZ) per kilogram in some seasons. These price fluctuations strongly affect the finances of some community members who employ only mono cropping, and force them to intensify their agricultural land, leading to environmental impacts such as, water pollution from water run-off. Baan Huay Kanoon in Ob Luang National Park has the least access to markets, employment and development opportunities because of poor transportation infrastructure. There is a general need for improved transport infrastructure to facilitate access to markets, employment and tourism opportunities for all villages.

6.3 Livelihood Resources of the Case Study Communities

The access to livelihood resources is important to the socio-economic well-being and sustaining of livelihoods of the Indigenous hill tribe communities in Northern Thailand's national parks. The DSLF assumes that people require a range of assets to achieve positive livelihood outcomes. The accessibility to the five livelihood capitals is necessary and is the foundation of the individual and household's sustainable livelihoods. Access to these livelihood resources changed with the establishment of Northern Thailand's national parks, and the Pga k'nyau and Hmong villagers have had to adapt livelihood strategies to best utilise the available livelihood resources, as well as to build social resilience to deal with vulnerability factors. The following discussion shows how the three Pga k'nyau and three Hmong villages' livelihood resources and their environmental management practices have changed since the establishment of the national parks and external development interventions. This information is based on their perceptions and perspectives, and includes the views of national park officials, NGOs, academics and tourism agencies.

6.3.1 Natural Capital

Agriculture is the dominant form of village livelihood, and many community members explained that they also grow various kinds of vegetables and fruit, all year around, including persimmons, baby carrots and potatoes, as well as flowers for selling at the hill tribe market (Figure 6.1). In Doi Inthanon National Park, the hill tribe market is a tourist destination that many domestic and international tourists visit to buy handcrafts. Villagers set their own price for these products.

> Villagers have to produce agricultural products as much as we can within the limited land areas …some family raise their chickens and pigs for their household consumption and for our village rituals [Community member, Ob Luang National Park].
>
> Although our agricultural areas are contrained, we can use our small backyards to grow edible plants such as carrot, chilli, tomatoes for our family consumption. For the communal land areas, we also grow rice in the paddy field in the ladder terrace style [Community member, Doi Inthannon National Park].
>
> ..If I have surplus from our agricultural products such as rice, persimmon, potatoes, plum, and baby carrot, which are enough for sell….I will sell them at the hill tribe market for tourists. Sometime my children collect flowers and sell them to tourists…so, selling agricultural products is one source of my household's income …the same as for other families in this village [Community member, Doi Inthannon National Park].

Figure 6.1 The Hill Tribe Market in Doi Inthanon National Park.

Figure 6.2 Rice Cultivation in Baan Pa Hmoon Village, Doi Inthanon National Park.

Figures 6.3 and 6.4 show the process of field ploughing by traditional practices and the use of a cultivator machine. Many community members explained that the use of a cultivator machine is for convenience and is less time consuming. However, it does mean that they have to use a lot of money for fuel.

Figure 6.3 Traditional Terraced Rice Field in Baan Pa Hmoon Village.

Figure 6.4 Using a Cultivator to Plough the Fields in Baan Pa Hmoon Village.

Most have adopted organic farming systems that have been introduced and supported by the RPF. Cash crop cultivation and sustainable agricultural techniques have also been developed by the PPF in order to reduce the deforestation rate caused by extensive traditional slash-and-burn agriculture (shifting cultivation).

Based on the interview data, the Royal Project Foundation (RPF) introduced and provided several training programs of organic farming systems to the six case study sites. At the time, the RPF also promoted both mono- and mix- cash crop cultivation with a variety of seeds and suggested that villagers use compost to produce natural fertilisers. All six villages in this study are members of RPF projects. The RPF works primarily through a membership system as explained by a staff member from the RPF who visited Baan Mae Klang Luang village during the time that I was conducting fieldwork:

> After harvesting, they sell their agricultural products to the Royal Project Foundation. Then, their incomes are deducted for administration fees and some amounts are returned to the community fund and the rest is their profit. The introduction of organic farming systems is promoted in each hill tribe village as a way to use less chemical fertilizer [RPF staff member, Doi Inthanon National Park].

In the three Pga k'nyau villages, almost every household has its own rice barn to store rice and other agricultural products for family consumption throughout the year (see Figure 6.5). A community leader explained that:

> We must have our rice barn to keep our rice and have the food storage house to keep other agricultural products and husbandry products. If we have more rice than the capacity of our household's rice barn, we will sell it at the local market for 50 Baht[16] per kilogram or we might share it with another family that does not have enough rice for their family [Park official, Baan Mae Klang Luang village, Doi Inthanon National Park].

[16] 25 Thai Baht equalled approximately one New Zealand Dollar (during March 2012 to August 2012: the period of data collection).

Figure 6.5 A Traditional Pga k'nyau House (left) and Rice Barn (right).

Whilst in this instance, emigration away from the villages had become a solution to balance consumption and production, other groups had changed their traditional practices to provide sufficient food for their communities. This happened when the expansion of national park areas confined the areas of the Indigenous communities, prohibited their access to customary natural resources and limited their agricultural areas.

> We have had to adapt our livelihood strategies to comply the national park regulations…These regulations prohibited us to access in the protected forest areas of the national parks…So, our village had invisible boundaries to limit our community areas and protected areas…Our animal hunting and edible plant collecting in the protected areas are prohibited…Then the agriculture becomes a greater important for our subsistence livelihoods for our food. [Pga K'nyau, Community member, Ob Laung National Park].

While this group increased agriculture to meet the needs created by the hunting grounds they had lost in Ob Luang National Park, the implementation of National Park regulations in the 1990s limited Baan Pa Kluay village's agricultural land, and this created great concern. In particular, as they were aware of seasonal and climatic changes that were already affecting what they could grow.

> Food security concerned us when we faced shifting seasonality that reduced the quantity of agriculural products. So that, we need to establish a small catchment for our farming and raising livestock such as chickens and pigs. We also have water buffalos for helping us to plough our terrace rice field [Pga k'nyau man, Baan Pa Hmoon village].

> We must store water for farming during drought periods. And now, all households have to raise livestock such as chickens and pigs for food and products. As I am aware, I think it [Ob Luang National Park] was established more than ten years. Since then, our village has been bounded within the boundaries of the National Parks. To comply with the national park's regulations, we are prohibited from accessing plants and hunting animals in protected areas. We had to learn how to live with the changes and had to adapt to sustain our livelihoods. Our food and products came from agriculture and animal husbandry. We have to work harder in the field and the only thing that we pray for is to have enough food throughout the year [Pga K'nyau, Community member, Baan Pa Hmoon village, Doi Inthanon National Park].

Other Indigenous hill tribe communities had also noted seasonal changes, and these changes further added to their anxieties around their loss of ability to access forest areas to collect fruit, water, and other resources as they had done traditionally. This was especially so when they could also see that the new farming and gardening allowed under the regulations were not as productive as they needed:

> Around two years ago, we observed that some of our fruit trees provide fewer products than the other years because of the long drought period, as I remembered, December to March. Then we had less income than last year. In this year, we got money from selling the surplus approximately 5,000-6,000 Thai Baht [200-240 NZ] per month. However, in that year, we got less than 3,000 Thai Baht [120 NZ] per month. This year, our village had set up two water tanks to keep water for our agricultural activities [Community member, Baan Pa Hmoon village].

The above interview data identified that seasonal changes influenced the agricultural production of the Pga k'nyau communities, particularly given the limitations of their land areas. Furthermore, the establishment of national parks has led to long-term conflicts over the use of natural resources and land rights. Currently, these Pga k'nyau communities still lack land ownership because their settlement areas belong to the national parks as national common property and thus, they are not allowed to have official land ownership certificates. In an excerpt from an interview on livelihoods and agriculture, two Pga k'nyau men explained:

> Our livelihoods depend on our agricultural product and livestock. However, we do not have the permanent land title [an official document of land ownership]. We knew that we live in the protected areas that belong to the state. So, we have limited agricultural and residential areas…. I knew that villagers are not allowed to expand the size of our village because our village areas are located within the National Parks and the forest reserve areas [Pga k'nyau farmer, Baan Mae Klang Luang village, Doi Inthanon National Park].

> I felt the uncertainty about our land ownership because our community areas are belonging to the National Parks, since it was established. However, I still believe that we, and future generations, can use and live in this area as long as we can continue participating in conservation activities for protecting the remaining forest [Baan Mae Klang Luang village committee member, Doi Inthanon National Park].

There are multiple perspectives on the influence of the establishment of the national parks on the livelihoods of the Indigenous communities. Many national park officials contend that the creation of national parks has been foundational to forest conservation and natural resource management. Consequently, Indigenous communities must also comply with the regulations that limit their access to customary forest resources in the protected areas. Furthermore, the lack of land rights and limitations of access to the protected forests has led to further marginalisation of these Indigenous communities. A Pga k'nyau community member stated:

> Sometimes, I think that our livelihoods are still changing with no direction, depending on the Thai policies of natural resource management. Now, we know and understand what the current situation is and deal with the changes as we can [Pga k'nyau man, Baan Mae Klang Luang village, Doi Inthanon National Park].

This study also found that other livelihood issues, such as, opportunities for education and access to healthcare services, are still limited in the hill tribe communities. Each of the six villages has only one elementary school. These communities rely on traditional knowledge of medicinal plants for healthcare. In cases of severe illness, they go to a district hospital, which is located very far from their village. Consequently, some villagers have moved to Chiang Mai city centre to seek better wages, work, healthcare services, and a higher education.

> We have had to work at home and look after our niece and nephews after we completed primary school at the Ni Yom Prai Pa Hmoon School [the only primary school in this village]. Although we would like to continue studying, we cannot do that because we do not want to leave our family. So we made our decision to stay with our family. At home, we make clothes and handicrafts to sell as well. We can save some money to send our children to secondary school in town [Pga k'nyau woman, Baan Mae Klang Luang village, Doi Inthanon National Park].

> We learnt how to make handicrafts from my mother. These products support our family income. A traditional cloth is 400 to 600 Thai Baht depending on styles, one scarf or one shoulder bag is the same price at 150 Thai Baht and small bags are 50 to 100 Thai Baht. We sell our handicraft products at the hill tribe market near the national park office. In one day, we can earn around 300 to 600 Thai Baht[17] from selling our products, but we do not make this every day [Pga k'nyau woman, Baan Pa Hmoon village, Doi Inthanon National Park].

[17] 25 Thai baht equals approximately 1 New Zealand Dollar.

From these interviews, I learned that both the Pga k'nyau and Hmong people have had to adopt many strategies to overcome the limitations of living within the national park boundaries. These strategies have helped them increase their income and lessen vulnerability factors such as, seasonal changes. Figure 6.6 shows a Pga k'nyau woman making traditional handicraft products to sell in their hill tribe market. She told me that she could receive 6,000-10,000 Thai baht from her handicraft products, and that this income is higher than her family income from agricultural products. Thus, making traditional handicraft products is one potential livelihood strategy for the Pga k'nyau women that would enable them to gain alternative household income while at home.

Figure 6.6 Making Traditional Handicrafts in a Pga k'nyau Village.

In the six villages, many of the villagers had participated and engaged in several projects of the Royal Project Foundation (RPF). These projects relate to reforestation and alternative livelihood activities, such as handicraft making. Additionally, the Royal Project Foundation provides financial support for each village to develop their infrastructure. The RPF also promotes a reduction in mono-crop cultivation and promotes rotational mixed-crop cultivation and organic farming instead of the traditional slash-and-burn cultivation in these six villages. During the data cllection, the six case studies employed semi-commercial agricultural practices, however, subsistence agriculture remains the main livelihood strategy. Surplus agricultural products are sold at the hill tribe market to visitors and tourists. In this study, the livelihood activities of the Pga k'nyau and the Hmong communities also include organic edible gardening and animal husbandry of pigs, chickens, cows, and water buffalo. These livestock are a significant part of subsistence agriculture. In addition, some of the villagers also work in the Royal Project Foundation as labourers and volunteers, working on an organic farm. They receive a daily income of around 150 -200 Thai Baht (approximately

6-8 NZ) from the RPF officials. For the following seasonal calendar, I collected information from the park official of the village and villagers (see Table 6.1).

Table 6.1 Seasonal Calendar of Pga k'nyau Communities and Livelihood Activities.

Month	Livelihood Activities and Agricultural Practices
January	The Pga k'nyau New Year (*Tha lay*) is a particular time after harvesting to celebrate with family and community. After a week of celebration, the Pga k'nyau people begin their routine work again (namely, gardening, farming, and handicraft making) to earn a living. This month is considered a highly suitable time to build or repair houses due to the weather.
February	Site selection starts by clearing land for new cultivation.
March	Villagers complete the selection of cultivation areas for 1) clearing and drying land, 2) and preparing materials to build field shelters.
April	1) Clearing and burning the land for replanting. 2) Building field shelters and basic facilities. 3) Gathering firewood. 4) Establishing firebreak and observation hall areas 5) Beginning replanting.
May	1) Planting of rice and vegetables, 2) Gathering firewood. 3) Building or repairing field shelters and basic facilities.
June	1) Clearing weeds from agricultural lands. 2) Reforestation activities as part of community-based natural resource management.
July	Ploughing fields for rice cultivation (flatland paddy farming) or the *'Thet Ku'* ceremony.
August	Park official of the village and villagers conduct the *'La Ku Ki Su'* ceremony of making wishes for plenty of agricultural products within the community.
September	1) Preparing for the harvest. 2) Weaving mats. 3) Making winnowing trays. 4) Building rice barns.
October	1) Preparing for the harvest. 2) Weaving mats. 3) Making winnowing trays. 4) Constructing rice barns. 5) Beginning the rice harvest. 6) Pounding rice.
November	Head of the village and villagers conduct the *'Ther Tor Toe'* ceremony (the harvesting ceremony) for 1) harvesting rice; 2) pounding rice; 3) harvesting other crops; 4) and collecting plant seeds for the next cultivation.
December	Head of the village and villagers conduct the '*Ther Tor Toe*' ceremony and '*Hu Plue*' ceremony (known as the gratitude ceremony to respect their harvesting god). In the meantime, they are engaged in 1) Harvesting other crops 2) Seeds and seedlings collection 3) Making rice whiskey (to strengthen the body and prevent colds) 4) Preparing for the Pga k'nyau New Year (*Tha lay*).

Source: Fieldwork (2012).

Table 6.2 Seasonal Calendar of Hmong Communities and Livelihood Activities.

Month	Livelihood Activities and Agricultural Practices
January	The Hmong New Year (*Tsa Hauv Toj*) is the traditional way of celebrating and praying to all the spirits (mainly for health, wealth, land, trees, and water) after completing harvesting. All the Hmong dress in traditional clothing and enjoy traditional foods, dance, and music, including the important and well-known ceremony of the ball tossing game (*pov pob*) between boys and girls of different clans as a symbol of their first step of adolescence (Figure 41). Four days after the New Year ceremony, the Park official of the community will lead the committee, the elderly, and the members of the community in conducting '*Dong Sen*', the ritual of worshipping the lords of nature, forest, and water. The purpose of this ritual is to protect the wealth and health of the community throughout the year.
February	Preparing the land for new cultivation.
March	1) Clearing fields 2) Preparing materials to build field shelters and food storage areas 3) Building livestock areas for chickens and pigs.
April	1) Clearing and burning land 2) Building field shelters and basic facilities 3) Gathering firewood 4) Establishing firebreak and observation hall areas 5) Begin planting.
May	1) Planting of rice and vegetables 2) Gathering firewood 3) Building or repairing field shelters and basic facilities.
June	1) Clearing weeds from agricultural lands 2) Reforestation activities as part of community-based natural resource management 3) Preparing rice cultivation and farming areas.
July	Ploughing agricultural areas for rice cultivation (flattening the paddy field for farming) and a variety of cash crops (for example, cabbages, shallots, prunes, persimmons, and carrots).
August	
September	Preparing for the harvesting of rice and cash crops.
October	1) Preparing for the harvest. 2) Weaving mats 3) Making winnowing trays 4) Building rice barns 5) Beginning the rice harvest 6) Pounding the rice.
November	1) Harvesting rice and other cash crops 2) Seed collection.
December	1) Harvesting other crops 2) Seed collection 3) Preparing for the Hmong New Year.

Source: Fieldwork (2012).

Based on this information, the main difference between the seasonal calendars and livelihood activities of the Pga k'nyau communities and Hmong communities relates to the practice of their culture and beliefs. These practices influence the activities that they participate in each month, in particular, their rituals involving the sacred forest. The second main difference is

that the Pga k'nyau communities mainly employ rice cultivation as their primary agricultural practice, whereas the Hmong are more cash crop oriented.

6.3.2 Human Capital

Human capital represents the skills, knowledge, ability to labour and good health that together enable people to achieve their livelihood objectives by pursuing different livelihood strategies. Restoring and enhancing human capital ensures that Indigenous hill tribe communities have access to education, health services, and training in their livelihood development. Ensuring that the affected community is knowledgeable of policies, legislation and regulations that may affect their ability to restore their livelihoods is part of guaranteeing the strength of human capital.

Generally, the livelihoods of the Pga k'nyau and Hmong people depend on their access to natural resources. However, socio-economic development pressures have led to changes in their basic lifestyles, with many interviewees explaining that they would like to have a better quality of life and enough food for household consumption every day. They also expressed the desire for their children to have a better quality of life and education. One particular concern of each village relates to the limited opportunities for young people to obtain higher education and employment. This has led some young people to migrate to Chiang Mai city. However, a primary school is available in Baan Pa Hmoon village, for which the Royal Project Foundation and Chom Thong Sub-District Administrative Organisation provides some financial support to (see Figure 6.7).

Figure 6.7 Ni Yom Prai Primary School in Baan Pa Hmoon Village.

The findings from the field research similarly suggest a number of positive changes brought about by some development in the education infrastructure and improved access to school facilities (such as, nursery and primary schools) in their village. One of the benefits noted by the Pga k'nyau communities is that there has been a shift toward a more positive attitude about education among research participants in each village, and their children now have access to some education:

> A primary school in Baan Pa Hmoon village has been well supported by many organisations and all children in this school when they completed their primary school… they would like to continue their higher education based on their household incomes…this school also provides scholarships for students who have good grades and are willing to continue their higher education [Community member, Baan Pa Hmoon Village].

6.3.3 Social Capital

The DFID (1999, pg. 9) provided a definition of social capital as "the social resources upon which people draw in pursuit of their livelihood objectives". These social resources are developed in three ways: networks and connectedness, membership of formalized groups and relationships of trust, reciprocity and exchange (DFID, 1999, 2004; Carney, 2003). With respect to the broad framework of sustainable livelihoods, social capital has a multi-dimensional relationship with 'Institutional Processes and Organisational Structures'. Carney (2003) further explained that when people are linked through norms and sanctions they may be more likely to form new organisations to pursue their interests than when they are not. Alternatively, strong groups help people to shape policies and ensure that their interests are reflected in legislation (DFID, 1999, 2004; Carney, 2003).

In terms of social capital, I also found that the Pga k'nyau people in the case study sites hold a strong sense of the socio-ecological relationships between people and forest as a fundermental natural resource for their customary livelihoods. This is also refered to in their name "Pga k'nyau", which means "children or people of the forest". They have harmonised their lives and use Indigenous ecological knowledge to conserve the surrounding forest areas. They also have their own distinct culture, beliefs and political contexts. They have developed their own social networks with external organisations in order to enhance their social resilience through several collaborative conservation activities such as, reforestation and forest fire protection. For the three Hmong villages in this study, the participating head of the village and community members explained that they belief in the god of the forest as well as

the god of protection, so they are also willing to protect the surrounding forests. They also have their sacred forest to protect, in which they carry out their rituals as a fundamental part of their traditional livelihoods. They participate in several collaborative conservation activities, as do the Pga k'nyau people. Their participation in these collaborative conservation activities also enables both the Pga k'nyau and Hmong communities to build their social networks as part of their social capital.

Doi Inthanon National Park administration has convened frequent meetings to propose these ideas to local community leaders and has begun providing support for villagers to prepare themselves for eco-tourism development. During this initial period of promoting community-based eco-tourism, only basic ideas and key related training has been provided, such as, for tour guides, and the distribution of local knowledge. This means that local communities are required to make their own investments in basic facilities such as, office structures or resort accommodation, using local cash contributions and local community labour. Local communities themselves conduct all the development of all the activities, including public relations and connections with various tour companies. The three Pga k'nyau villages in this study have worked with many NGOs, including government organisations, and the Royal Project Foundation through several livelihood development projects.

6.3.4 Financial Capital

Two Pga k'nyau villages (Baan Mae Klang Luang and Baan Pa Hmoon) in Doi Inthanon National Park, two Hmong villages in Doi Suthep-Pui National Park (Baan Hmong Mae Sa Mai and Baan Hmong Doi Pui) including one Hmong village (Baan Pa Kluay) and one Pga K'nyau village (Baan Huay Ka Noon) in Ob Luang National Park have employed semi-commercial agriculture by using organic farming systems as a main source of household incomes. These six communities have also developed community-based natural resource management as a potential livelihood strategy to protect their natural capital as well as to ensure the quantity of agricultural products to support their financial capital. Four of these villages (two Hmong villages in Doi Suthep-pui National Park and two Pga k'nyau villages in Doi Inthanon National Park) have engaged in CBE as part of their alternative income.

In Doi Suthep-Pui National Park, the average per capita income of Baan Hmong Mae Sa Mai village in 2011 was reported to be approximately 2,400 US (3,200 NZ) per annum and 6.57 US (8.76 NZ) per day as recorded by the park official of the village. Accordingly, in Baan

Hmong Doi Pui village, the average income per capita in 2011 was reported to be approximately 4,762.5 US (6,350 NZ) per annum and 13 US (17.39 NZ) per day, again recorded by the Park official of the village. From these data, Baan Hmong Mae Sa Mai village can be classified as comprising relatively poor to moderate household incomes, and Baan Hmong Doi Pui village can be classified as having moderate household incomes.

In Doi Inthanon National Park, the head of Ban Mae Klang Luang village reported that the average incomes of each household in 2011[18] was approximately 2,865 US (3,820 NZ[19]) per annum, and 7.84 US (10.46 NZ) per day. The head of Baan Pa Hmoon village reported that the average income of each household in Baan Pa Hmoon village in 2011 was reported to be approximately 2,314.5 US (3,086 NZ) per annum, and approximately 6.34 US (8.45 NZ) per day. Based on this data, both villages can be classified as having relatively poor to moderate household incomes in Thailand.

In Ob Luang National Park, the average income per capita in Baan Huay Ka Noon village in 2011 was reported to be approximately 1,140 US (1,520 NZ) per annum and approximately 3.12 US (4.16 NZ) per day as recorded by the park official of the village. From these data, Baan Huay Ka Noon village can be classified as having poor household incomes.

All six villages have developed financial capital through cash cropping. Two Pga k'nyau villages in Doi Inthanon National Park have also had opportunities to develop community-based ecotourism with support from the RPF and external organisations; some households have produced handicraft products for sale to tourists. While all three Pga k'nyau engage simultaneously in subsistence and cash economies, development emphasis is currently on the cash economy. This has led to changes in socio-cultural practices and agricultural practices, and the intensification of mono- and mixed- cash cropping has been employed in the six case study sites.

While funding is distributed evenly across all villages, the outcomes are different. This occurs because there are better infrastructures supporting the two Hmong villages in Doi Suthep-pui National Park and the two Pga k'nyau villages in Doi Inthanon National Park, as they are less remote from the market and there is better access to the city centre. Due to the ease of access to the market and city centre, these four villages were enabled to establish and

[18] The year before I conducted my fieldwork. I conducted my fieldwork during February to August 2012.
[19] Throughout this thesis, NZ means the New Zealand Dollar and US means US Dollar. The rate of exchange used is 1 NZ = 0.75 US (this was an average rate during the data collection period).

develop CBE and are therefore more successful than Baan Huay Ka Noon and Baan Pa Kluay villges in Ob Luang National Park. Some community members of Baan Huay Ka Noon village explained that they faced transportation challenges during the rainy season because of the poor road conditions. All three villages utilise community funds as a financial and social safety. These funds are used to contribute to soico-economic resilience and self-sufficiency in times of shock.

The use of community funds in the two Hmong villages (Baan Hmong Doi Pui and Hmong Mae Sa Mai village) also covers the cost of maintenance for community-based ecotourism (CBE) and community-based natural resource management (CBNRM), including reforestation projects and forest fire protection. However, some community members believe that there is a mismanagement of funds by local leaders. The process in which funds from the RPF are contributed to by each village needs to be more transparent and carefully monitored. Thus, there is a need to enhance security, accountability and transparency in the management of community funds. Many community members observed that they also receive remittance from individuals working in urban centres. However, some expressed the concern that village workers are paid less than other Thai citizens due to lack of education and discrimination.

Baan Hmong Doi-Pui use tourism as a way to increase personal and community incomes. This adds to their financial capital, especially in regards to selling home grown products like coffee, tea and herbs. This tribe has an advantage of being the closest proximity to the tourist spots compared to other villages in this study. Baan Hmong Mae Sa Mai uses a different method of ecotourism. They host visitors who come to help replanting deforested areas. This gives the village to gain income from hospitality, whilst visitors contribute to reforestation and enjoy different cultural experiences. The visitors purchase the experience of living and eating at eco-lodges. The villagers also sell home made products. These activities increase both social and financial capital. The villagers also act as tour guides showing tourists beautiful places and special things in their village, such as farms, waterfalls, tree species, and birds.

6.3.5 Physical Capital

The two Pga k'nyau villages within Doi Inthanon National Park and the two Hmong villages within Doi Suthep-Pui National Park have a better transportation infrastructure (e.g. road systems) than Baan Huay Ka Noon village in Ob Luang National Park. These two villages in

Doi Inthanon National Parks also have a reliable electricity supply and a good running water supply. The poor quality of transportation infrastructure in Baan Huay Ka Noon village within Ob Luang National Park has constrained livelihood development opportunities. Many community members also believe that local government corruption prevents proper maintenance of the existing transport infrastructure.

6.4 Transforming Processes and Structures of the Case Study Communities

Both the Pga k'nyau and Hmong villages in this research have participated in the Joint Management of Protected Areas (JOMPA) since the late 1990s. In Northern Thailand's ntional parks, JOMPA is also known as the first co-management initiative which has its focus on activities promoting local empowerment and participation in collaborative natural resource management. The implementation of JOMPA attempted to solve long-term conflicts between the parks and the people over resources and overlapping land use in the past. However, these conflicts still remain a challenge to national park management, and are considered a delicate issue due to political involvement.

In 2012, the Forest People's Programme (FPP) introduced the Whakatane Mechanism to the forum for the development of Thailand's management of national parks (a meeting held in Chiang Mai in 2012). The implementation of the Whakatane Mechanism was an innovative participatory approach to improve existing co-management initiatives in Northern Thailand's national parks. The first two pilot Whakatane Assessments[20] were implemented in Mt Elgon, Kenya, and Ob Luang National Park, Thailand, during 2011 to 2012.

During my visit to Ob Luang National Park, I interviewed the park official of one of the national parks, who gave the following opinion on national park management:

> Many Indigenous communities live in the Northern Thailand National Parks. One lesson that we learnt from the past when we used the traditional national park management was that conflicts arose. Thus, co-management initiatives have developed as a way to create mutual understanding of the benefit of participating in conservation activities and community-based natural resource management in relation to the Indigenous communities' sustainable livelihoods [Park official, Ob Luang National Park].

[20]For further information see http://www.forestpeoples.org/topics/environmental-governance/internationalprocesses/whakatane-mechanism

National Park officials therefore focus on the development of co-management initiatives that involve local and Indigenous community empowerment and participation. As explained by the interviewees, the meanings and forms of local empowerment and participation are various. Their comments are as follows:

> The terms local empowerment and participation are widely overused; however, the real practice is still unclear. I will not use the terms local empowerment and participation, but I want to use as terms the roles and responsibilities of the park official of the village and villagers in natural resource management and conservation activities. These terms are easy to understand when I work with each village [Senior staff member from CARE, Chiang Mai].
>
> In practice, local empowerment and participation of each community has had to adapt over time in response to the changes of national conservation policies, which may change in the future [Senior staff member from IMPECT].

Forms of local empowerment and participation are largely characterised as a more democratic natural resource management practice, enabling Indigenous people to participate in conservation activities and the policy-making process. However, changes in national conservation policies in the future may change the ways that local people are empowered and participate within in each community.

One national park official, who was interviewed as part of this study, explained that he used to view the hill tribe people as problematic as they destroyed the forests. However, he now realises that currently, the hill tribe people are also 'forest protectors' because the hill tribe people have used their traditional knowledge and conservation practices to protect their surrounding forest. Accordingly, he has changed his attitude based on his experiences of collaborative management involving national park stakeholders and hill tribe communities. He explained his opinion of the hill tribe people and the management of the national parks, as follows:

> If villagers in national parks area understand [how to protect forest areas and wildlife], they will work and cooperate well with national parks officials. In my opinion, I think the development of co-management initiatives and the zoning system are significant strategies to enhance the sustainable development in the National Parks areas [Park official, Doi Inthanon National Park].

At present, the three selected national parks do not use the traditional exclusionary model of national park management but have shifted to an inclusion model to develop local participation in natural resource management. In addition, these parks have established co-mangement initiatives, which also enhance local participation and empowerment. However,

the process of co-mangement development has changed over time based on conservation policies. In the six Indigenous hill tribe communities, the villagers have developed community-based conservation to protect their surrounding environment.

This study also focused on local empowerment and participation in the management of the national parks, especially within the collaborative policy-making process. The issue of involvement in collaborative policy-making still needs to be addressed as this is still a particular challenge for Indigenous communities. Some of the villagers commented that the current situation of local empowerment and participation still looks like "imagined empowerment and participation" as sometimes it was not really put into real practice.They also explained that both empowerment and participation were only stated in the conservation policy requirements of the management of national parks and the Thai constitution (1997). Concerns about local empowerment and participation were related to the use of the participatory approach and transparency in the process of collaborative policy-making. According to interview data, the term 'transparency' was a concern, particularly with regard to local participation in conservation management practices. In addition, in some instances, officials did not want local people to know about corruption issues involving national park officials.

> The transparency and acountability of national park management are important for the enhanment of sustaiable development….. However, sometimes the policy-making process of national parks does not involve Indigenous communities, and it may link to the lack of transparency and acountability issues…. Sometimes, the villagers lack opportunities to partipating in policy-making processes….Currently, the development of co-management that help Indigenous people to participating in some conservation activities in order to protect their natural resources [Senior staff member from the SDF].

Despite this, the Park official of Doi Inthanon National Park argued that the protected forest areas are important for conserving biodiversity and their value as natural resources. He commented as follows:

> The biological conservation efforts as well natural resource protection are necessary and important. Thus the National Parks, Wildlife and Plant Conservation Department has established various national parks. Many national parks encompasss all natural landscapes [forest and marine national parks] [Park official, Doi Inthanon National Park].

In Thailand, the purpose of national park establishment is to protect the natural landscape, biodiversity, and ecological systems as significant resources that need to be protected from

destructive human activities (Dearden et al., 1996; Dearden, 2002). However, a senior staff member of IMPECT[21] who works with the Pga k'nyau and Hmong communities within and adjacent to Northern Thailand's National Parks disagreed and noted that:

> The traditional management of national parks have been considered as out of date and not compatible with the nature of Thailand National Parks, which are also home to many Indigenous communities. The traditional Thai management of national park practices led to conflict over natural resource use and land rights. Indigenous communities' livelihoods depend on the access to their customary resources and they also protect their surrounding environment by their traditional knowledge. Recently, co-management initiatives with a participatory mechanism have been developed and adopted in many northern Thailand National Parks. Co-management initiatives also enhance the potential of local and Indigenous people to be involved with natural resource management in the national park areas [Senior staff member, IMPECT].

The villages employ natural resource management practices, such as reforestation, the establishment of firebreaks, the use of a fire observation hall (a tall structure which enables the villagers to keep observing the surrounding forest on a rotational basis), and the construction of small water catchment areas. Additionally, waste management is also part of natural resource management. For example, in Baan Mae Sa Mai and Baan Hmong Doi Pui villages, villagers learned how to separate the types of garbage at the schools in their village. Some of this garbage, such as metals and plastics, are gathered and sold at the junk shop in Chiang Mai city and the money received is saved for the village development fund.

Academics from FORRU revealed that areas of conserved forest increased not only because of national park expansion, but also because villages developed community-based natural resource management as part of their livelihood strategies. Representatives from FORRU - Stephen Elliot (Director and co-founder) and Kwankhao Singhaseni (Chief fieldwork researcher), pointed out that reforestation and firebreak management are vital conservation activities, which involve the sustainable livelihood practices of the communities. In Doi Suthep-Pui National Park, Baan Mae Sa Mai village is one of the FORRU project study sites. Since 1994, FORRU has conducted reforestation projects and provided environmental education to this village. Dr Sutthathron Chairuangsri (Co-director of FORRU) recommended that the beginning stage of reforestation starts with understanding the background of the community and then developing communication (as a rapport process) so people can share their opinions. This was a way of empowering community members to participate in the

[21] Inter Mountain People's Education and Culture in Thailand Association.

reforestation project. As a result, the reforestation areas within this village have increased due to good collaboration and natural resource management among FORRU staff, villages, university students, volunteers, national park officials, and other groups interested in public relations and social media. GIS data of deforestation areas did not exist during the fieldwork and based on interview data shown that there had a significant forest disappearing in the past and some areas in the presents due to the mismanagement of national parks and forestry.

However, despite this, several of the research participants said that some areas of forest in Northern Thailand had disappeared in the past because of forest fires, illegal logging, and unsustainable land use. In Baan Hmong Doi Pui and Baan Pa Kluay villages, many villagers observed that deforestation had occurred much more in the past than in the present. However, they also said that some areas still have some problems due to forest fires and some illegal logging. Several villagers stated that their parents had witnessed the effects of commercial logging, especially of the teak forest, before the 1980s. They also observed that forest areas have increased since the establishment of the national parks. Many villagers in Baan Mae Sa Mai village explained that they like to participate in conservation activities in their village particularly for reforestation and forest fire protection, with support from the Forest Restoration Unit (FORRU). As a result, forest areas in the village are now increasing.

According to Kwankhao Singhaseni, the chief field researcher of the FORRU, the reforestation areas that started in 1998 had a greater canopy density and more seedlings than in 2000, 2002, and 2004. In her research summary, she noted that canopy density and number of seedlings are good indicators of the rate of forest recovery. Based on her results, she explained the changes in forest conditions in her study sites. In Baan Mae Sa Mai village, reforestation plots were chosen from nearby areas of forest degradation and farms that had been abandoned for approximately four to seven years. Reforestation practices can affect the composition of e tree species in the original forest. Thus, the selection of tree species is important for the reforestation project. Dr Sutthathron Chairuangsri, co-director of the FORRU, suggested that the selected tree species should be endemic with a high growth rate and high survival rate. She explained that when the forest recovery rate is high, birds and other wildlife animals may return to the area.

The increase of protected areas and national parks, together with the transition to greater agricultural activities, represents significant changes, not only for the livelihood strategies of the Indigenous hill tribe communities, but also for changes in land use. In the three Hmong

villages of this study, interviewees explained that they grew endemic tree species in their plant nurseries for approximately 2-3 months before transferring them to reforestation areas. This allows them a better chance of growing well in the natural conditions. In Baan Mae Sa Mai village, many villagers commented that they have the motivation to participate in reforestation because they have found that through reforestation, the problem of water shortages has disappeared.

The rapid growth of population in each community has increased the need for water consumption for daily life usage and agricultural activities. Based on the interview data from Baan Pa Kluay village, many interviewees mentioned that they have faced problems of water pollution due to the use of chemical fertilisers and pesticides. To solve this problem, these interviewees also stated that they currently use sustainable agricultural practices, such as, organic farming systems. In Baan Pa Kluay village, many interviewees explained that they used to have problems with water shortages in the dry season, and they established several water catchment areas nearby agricultural areas to reduce the problem of water shortages in the dry season. The head of Baan Pa Kluay village also explained that the establishment of small water catchment areas (as illustrated in Figure 6.8) can provide villagers with water for consumption and agricultural activities throughout the drought period.

Figure 6.8 A Small Water Catchment Area within Baan Pa Kluay Village.

Based on the interviews, there are two different views on the practices of national park management and the livelihoods of the Indigenous people. Currently, agreements of co-management initiatives have been implemented in the three selected national parks in this study. These agreements enable the Indigenous hill tribe communities to participate in

conservation activities and enable them to communicate directly with national park officials. Thus, these agreements can be seen as a way of developing a participatory conservation approach to solve the existing conflicts between national park officials and Indigenous communities. However, this study found the results of co-management initiatives vary and may not involve true power sharing but are rather a way of strengthening the government's control over national park policy, management, and allocation. Instead of contributing to local empowerment, such arrangements might be further marginalized Indigenous hill tribe communities as they still lack opportunities to participate in the policy-making processes of national park management.

Another concern over the changes in livelihoods as identified in this study was related to the disappearance of traditional beliefs and practices among the young Hmong and the young Pga k'nyau. The majority of the Hmong and the Pga k'nyau believe their traditional religions, and both groups also worship their ancestors and various spirits (IMPECT & FPP, 2006). They use Animistic practices, including slaughtered animals, such as chickens, cows, and pigs, to worship forest, water, and land spirits. Over the past decades, many of the Hmong people have become Buddhist or Christian. With regard to these changes, Mr. Neng, an assistant to the park official of Baan Mae Sa Mai village, explained:

> Some of the Hmong will say that they believe only in Buddhism because Animism is not an official religion. However, the majority of the Hmong people now believe in both, and a small group believe in Christianity [Assistant park official, Baan Mae Sa Mai village, Doi Suthep-Pui National Park].

In this study, I found that the majority of the research participants from the selected Hmong communities are Buddhist but come from an Animistic belief background. Only a few of the people are Christian. I also asked Mr Neng how they decide what to believe. He explained:

> Based on our family background, we can believe in both Buddhism and Animism. But in some families, they chose to believe in Christianity …this means they cannot participate in our traditional ceremonial rituals. At present, it is a freedom to select what to believe and not to believe. In ceremonial rituals, the park official of the village, the village committee, the priest, community members, my family members and myself, always participate with full respect to the spirit of nature and we always follow the priest in the ordering of the steps of the ritual [Assistant park official, Baan Mae Sa Mai village, Doi Suthep Pui National Park].

In addition, he stated the following concerns:

> The new generation feels free to choose what to believe and some of them tend to convert to Christianity. Moreover, some of the young people would like to inter-

> marry. So, we are concerned that the results of these might lead to the loss of our rituals in our younger generations, because they prefer to have better livelihoods with opportunities, particularly in education and work. As a result, most of them move to town when they have completed their last level of primary school [approximately 12-15 years old]. Thus, the only thing that we can do is to bring them to observe the ceremonial rituals. This was how we learnt when we were young [Assistant park official, Baan Mae Sa Mai village, Doi Suthep Pui National Park].

This interview excerpt with Mr. Neng highlights the concern that the trend of Christian conversion may mean that younger generations are not interested in following the traditional rituals and cultural practices. In addition, the younger generations are tending to move to Chiang Mai city and other provinces to gain opportunities for higher education and better future income. However, Mr. Neng further explained the importance of the rituals as follows:

> Every year, the park official of the community, the priest [the rituals leader], village committee and I always managed the '*Dong Seng'* ceremony. This activity is held in our sacred forest. All villagers are welcome to attend this ceremony. This ceremony is based on our belief in the spirits of nature including land and forest. Thus, we conduct this ceremony regularly every year after our New Year ceremony. This is to protect us, our community and our forest from the bad things. This is also a way to express the importance of maintaining the forest and the other natural resources [Assistant park official, Baan Mae Sa Mai village, Doi Suthep Pui National Park].

Consequently, I learned that the Hmong people have strong beliefs in the power of the spirits, of nature, and believe that these spirits can protect their communities from the impacts of vulnerability factors, such as, heavy flooding and long-term drought. These beliefs inform the customary practices and ceremonies of the Hmong people, which are the core rituals and essence of being Hmong (Huang & Sumrongthong, 2004).

6.5 Livelihood Strategies and Outcomes

As has been referrd to previously, apart from agriculture, Baan Mae Klang Luang, Baan Pa Hmoon, Baan Hmong Doi Pui and Baan Hmong Mae Sa Mai villages have also developed their own community-based ecotourism (CBE) as a part of their alternative incomes. However, there are some negative impacts of unsustainable management of CBE in Baan Hmong Doi Pui that were observed by the community members, including environmental and socio-cultural impacts such as pollution and the inappropriate behaviour of tourists. For example, CBE has been poorly managed in Baan Hmong Doi Pui village because they overlooked the capacity for tourists as well as lacking codes of conduct for ecotourism.

There is a need to control the number of tourists during the high tourist season to control the impact on air and water pollution in this village. Sustainable CBE management also requires adequate ecotourism training and improved information technology.

Baan Huay Ka Noon village would like to develop their own CBE to increase household income, but infrastructure and electricity within their villages are too limited. Baan Huay Ka Noon village has solar cell panels to capture and store energy in rechargeable batteries, but this energy is only enough for limited community purposes.

Baan Mae Klang Luang and Baan Pa Hmoon village have also developed CBE as part of their community-based natural resource management strategy to protect their environment whilst also increasing household income. In Baan Pa Hmoon village, only one eco-lodge has been established (see Figure 6.9). However, in Baan Mae Klang Luang village, many eco-lodges in a mixture of traditional and modern styles have been established around the rice fields (see Figure 6.10). In Baan Mae Klang Luang village and Baan Pa Hmoon Village, many of the villagers participate in conservation activities, such as, reforestation and firebreak establishment, together with national park officials, academics, and non-government organisations (NGOs).

Figure 6.9 Community-based Eco-tourism in Baan Pa Hmoon Village.

Figure 6.10 Community-based Eco-tourism in Baan Mae Klang Luang Village.
Source: Ploy & Phew (Owner of ecolodges, fieldwork 2012)

In the three Hmong villages, many of the villagers interviewed in this study recognised the establishment of firebreaks as an essential activity of forest conservation, and that a suitable strategy for fire protection was an important priority. This was supported by Baan Hmong Mae Sa Mai, where many interviewees explained that they established firebreaks as part of their environmental management practices, and mentioned that when a forest fire did occur, they participated in extinguishing it. In each village, many interviewees said that both men and women participated in fire protection activities, and that some villagers worked as fireguards monitoring fires. Two interviewees in Baan Hmong Mae Sa Mai village explained that the villagers have to establish firebreaks to protect their community and agricultural areas. Other interviewees also explained that the park official of the village and village committee have a duty to warn villagers not to burn the forests and they also have to organise preparing the establishment of the firebreaks. However, they also explained that some forest areas adjacent to their village were burnt every year by the weather during the dry season.

In Baan Hmong Doi Pui village, many villagers described the frequency of forest fires as a serious problem, which can be a potential cause of massive deforestation and which can also destroy some areas of the village. However, due to fire protection campaigns, the use of fire as a way of clearing the land is used much less today than in the past. As a result, forest fires now occur less frequently than in the past. These conservation activities are also related to the development of adaptive co-management for this National Park. Over the past two decades, adaptive co-management has developed through the process of 'learning by doing', and National Park officials have worked with hill tribe communities, NGOs, and academics from Chiang Mai University in the development of this strategy.

6.6 Conclusion

The establishment and regulation of national parks have created both constraints and opportunities for the villages in this study. To secure and sustain their livelihoods, they have had to adapt their livelihood strategies to comply with national park regulations and land use restrictions as well as to protect their natural resource through their community-based natural resource management. They also developed their own social resilience through their community networks to seek coping strategies to deal with external socio-economic development pressure and environmental degradation. However, the establishment of national parks has also provided socio-economic benefits that have led to positive livelihood outcomes to these communities through the support from external organisations and from infrastructure, education, and tourism development. According to the interview data, these communities have had to change from their customary livelihoods in order to deal with limitations of access to natural resources, land use restrictions, and the lack of land ownership.

The three Pga k'nyau villages have engaged in sustainable agricultural practices and developed their own practices of community-based natural resource management (CBNRM). Only two villages (Baan Mae Klang Luang and Baan Pa Hmoon village) have adequate infrastructure (for example, good roads and access conditions, and reliable electricity supplies) to develop community-based ecotourism (CBE) in order to increase household and community incomes. One Pga k'nyau village (Baan Huay Ka Noon village) needs further improvements in their infrastructure in order to develop CBE. Baan Hmong Mae Sa Mai and Baan Hmong Doi Pui village have potential infrastructure such as good roads and reliable electricity supplies to develop their community-based ecotourism (CBE) to increase

household incomes and contribute to their community funds. However, the third Hmong village, Baan Pa Kluay, needs improved transportation infrastructure in order to develop a CBE. In the six hill tribe villages, CBNRM and current livelihood strategies can simultaneously develop together with collaborative working and policy-making through co-management initiatives within Northern Thailand's national parks. Although further improvements to the existing livelihood strategies and natural resource management practices are needed, consistency and transparency in co-management and related initiatives towards the sustainable development of Indigenous communities' livelihoods and the management of National Parks is also required.

CHAPTER 7: DISCUSSION

7.1 Introduction

The DSLF revealed that the participating Pga k'nyau and Hmong communities have been confronted with challenges to their livelihood strategies within the national parks. These challenges include on-going environmental degradation, declining access to agricultural land, natural resources from the forest, and uncertainty as to how access to these things will change. This uncertainty exists because the various authorities governing the forests keep changing the rules about what they can and cannot access, due to political pressure and changes.

In this study, research participants articulated that the key barrier to socio-ecological sustainability is the prioritization of economic development to serve mass tourism over socio-ecological imperatives. Attaining ecological sustainability requires ongoing local participation in sustainable development and conservation decision-making forums. Organisations such as, the ministry managing the national parks have the ability to impose laws on the Indigenous people without prior consultation. If there were a more collaborative approach, the outcomes could be more sustainable, both in terms of hill tribe livelihoods and increasing biodiversity.

The purpose of this chapter is to discuss the key research finding in conjunction with relevant literature. The chapter is divided into five sections including this introduction (7.1). Section 7.2 discusses the changes and challenges to the livelihoods of participating hill tribe communities that have occurred since national parks were established. Based on DSLF livelihood analysis used in this study, this section will outline and discuss vulnerability contexts, livelihood assets, transforming processes and structures, livelihood strategies, and potential livelihood outcomes, which were found in these participating hill tribe communities. Section 7.3 discusses the decentralisation of natural resource management and the development of co-management initiatives. Decentralisation is a key influential factor impacting on sustainable hill tribe communities' livelihoods and their environmental management practices. Section 7.4 reviews the development of community-based conservation among the participating hill tribe communities. This section also includes a discussion of community-based ecotourism and community-based natural resource management. The last section presents a conclusion to the chapter (7.5).

7.2 Changes and Challenges to the Livelihoods of Hill Tribe Communities

Since the early 1960s, the implementation of the National Parks Act (1961) and the National Forest Reserve Act (1964) has limited the use of natural resources and access to protected forest areas. This has resulted in challenges and changes to Indigenous hill tribe communities' livelihoods in Northern Thailand (Dearden, 1997; Dearden, Chettamart, Emphandu, & Tanakanjana, 1996). Consequently, the participant communities face uncertainties over land ownership due to the implementation of conservation policies and the National Park Act (1961). Community land areas are included in national park areas, and the expansion of agricultural areas into protected forest is prohibited because of those Acts. Effective conservation efforts within national parks and protected areas to reduce deforestation have to consider its causes and impacts, however, the root causes of on-going deforestation and environment degradation relate to several factors and different actors. Thus, an in-depth identification of these root causes is always considered as a main challenge for national park management. Conservation policies of these national parks need an appropriate balance with collaborative decision-making from several groups of national park stakeholders and from the Indigenous hill tribe communities.

The vital conservation strategies of national park management are the implementation of national park regulations and land use restrictions. However, these regulations and restrictions have created limitation problems to the residing communities involved and to their agricultural land areas. There are constraints and conflicts over land use rights and access to natural resources leading to negative impacts among the local and Indigenous communities in and adjacent to the national parks areas (Roth, 2004a, 2004b). Research findings indicate that Northern Thailand's national parks are still facing an undergoing imposition of socio-economic development pressures that result in adverse impacts on environment and hill tribe communities' livelihoods. In some cases, these factors relate to the rapid development of infrastructure for serving mass tourism activities in the parks. These factors are compounded by the lack of fully participatory governance that led to the further socio-ecological unsustainability.

7.2.1 Vulnerability Contexts

Due to land use restrictions and land reforms resulting from the National Park Act (1961), the six studied villages have gone through reconciliation processes to address land ownership.

They have had to adapt their livelihoods to comply with national park regulations. The vulnerable and marginalized communities in ‘sNorthern Thailand national parks are faced with a series of interconnected environmental management challenges, such as, accelerating environmental degradation, demographic change and movement, declining access to suitable agricultural land, and increasing restricted use of forest resources.

There are now fewer conflicts over natural resource uses and land ownership in the selected case study sites than in the past four decades. However, they still face the uncertainty of land ownership because their community areas now belong to the national parks. Consequently, the six study communities have had to adapt their livelihood strategies in response to the limitations of land use and limited access to their customary natural resources. Despite the National Logging Ban Act (1989) and a decline in traditional slash-and-burn agriculture practices by the Indigenous hill tribe communities, deforestation continues to take place in many parts of Northern Thailand’s national parks. There are different perspectives of deforestation from the villagers and the officials. During interviews, both the Pga k’nyau and Hmong participants explained that they are willing and capable of protecting their forest areas, based on their traditional livelihood practices. The villagers view the outsider as the cause of deforestation with illegal logging and massive deforestation logging through forestry concessions. Due to the National Park regulations, the expansion of any agricultural area into the protected forests is prohibited. The National Park officials viewed any deforestation as illegal logging including that used by Indigenous hill tribe people wishing to expand their agricultural areas (Roth, 2004a, 2008).

In this study, many villagers felt a need to expand their agricultural areas in order to maximise their household incomes. They also expressed concerns about deforestation for its socio-ecological impacts on their livelihoods, particularly through water shortages and the loss of agricultural products. However, the problems of deforestation are largely under control and are no longer a major problem in the six study sites. National Park officials emphasise reforestation as a vital strategy for natural resource management and watershed protection. The villagers also view reforestation and forest fire protection as significant conservation strategies. Their participation in reforestation and forest fire protection efforts are considered as a part of co-management initiatives to protect forest areas and other natural resources. The national park officials also believe that reforestation has converted some abandoned agricultural areas back into forest.

In this study, deforestation, forest fires, and both water and air pollution were discussed as part of the environmental problems of Northern Thailand's national parks. Based on much of the literature, poverty has been identified as a primary factor that causes deforestation, particularly in the rural and upland areas where Indigenous communities live in, and adjacent to, the national parks and protected areas (Geist & Lambin, 2001; Grainger, 1993, 2004; Lombardini, 1994; Rudel & Roper, 1997). This contrasts with the worldwide belief that the main reason people destroy the environment is a lack of environmental awareness and social responsibility (Henkemans, Persoon, & Wiersum, 2000; Leeuwen, 1998; Lombardini, 1994; Myers, 1994). External forces also lead people to utilise or misuse forest areas for their survival, which makes conservation difficult or impossible (Henkemans *et al.*, 2000; Leeuwen, 1998; Lombardini, 1994; Myers, 1994).

The links between deforestation and poverty are usually related to socio-economic development pressures (Geist & Lambin, 2001). But Moseley (2005) found that there were no relationships between wealth, land use practices, and environmental degradation in Mali, Africa. His findings also found no connections between poor households and less sustainable soil management. In this study, many interviewees explained that unsustainable land use management could be a potential cause of deforestation with further environmental degradation. They also expressed their views of the need for ways to develop sustainable land use in the national park areas to be examined. Despite the study villages of Baan Huay Ka Noon and Baan Pa Kluay within the Ob Luang National Park being relatively poor, no deforestation was found in the forests surrounding these communities, consistent with Moseley's (2015) observation.

The results of this study therefore do not support a relationship between poverty and marginalisation on the one hand and environmental degradation on the other. The six communities in this study have all been involved with several conservation activities to protect their environment and natural resources. Environmental problems are complex, and it is difficult to cope with the impacts of poverty and marginalisation on the environment (Ferraro, Hanauer, & Sims, 2011; Oksanen, Pajari, & Tuomasjukka, 2003). The availability of forests can, in some cases, support the local and Indigenous people as natural capital and thus provide a form of safety net to help alleviate poverty (Arnold, 2002; Ferraro *et al.*, 2011).

7.2.2 Livelihood Assets

In this study, many Hmong villagers explained that they have tried for many decades to improve their image as forest guardians by participating in conservation initiatives, such as forest restoration projects and forest fire management. The results of this study have yielded similar impressions of the Hmong and their conservation initiatives in concordance with the studies of Hengsuwan (2003) and Siriphon (2006). Congming (2003) noted that the Hmong people in China considered the protection of trees as important to their livelihoods. They regarded a tree as being equal with human life; in addition, tree roots can hold water in the soil, which can protect their villages from soil erosion. In this study, the research findings reveal that both the Pga k'nyau and Hmong villagers value and pay attention to the important of forest areas and water resources for their livelihood security. Before using forest resources, both Pga k'nyau and Hmong villagers explained that they are required to seek permission from national park officials to allow them to cut down or gather timber for house construction. In each of the six villages studied, the participants explained that they grow their fruit trees for household consumption and the surplus is sold at the market, and the trees are used for firewood.

Natural Capital

The results from this study show that participating Pga k'nyau and Hmong villages have continued both self-subsistence-oriented and market-oriented agricultural practices. Many Pga k'nyau and Hmong villagers explained that they use cash crop cultivation as a market-oriented agricultural practice that enables them to increase their household incomes by selling agricultural products at the local and hill tribe markets. Due to limited land areas, many Pga k'nyau and Hmong villagers have learnt the techniques of organic farming systems, considered as efficient and sustainable, from the Royal Project Foundation. As a result of combining traditional and modern mechanical agricultural techniques, many Pga k'nyau and Hmong villagers indicated that the range and number of their agricultural products have increased.

Human Capital

The Royal Project Foundation (RPF) is a primary organisation that supports the livelihoods of hill tribe communities through education (nursery and primary school) and sustainable agricultural practices (organic farming). The RPF developed the initial stages of coffee and

tea plantations within the hill tribe villages. The RPF also supports traditional products (handicrafts and clothes) and related training programs. Several training programs are related to agricultural techniques and alternative livelihood activities. However, many communities face uneven support from the external organisations such as RPF and Sub-district (*Tambon*) Administration Organisation. Those communities which are well-known tourist destinations with a better infrastructure (road and electrical supplies), such as, Baan Mae Klang Luang and Baan Pa Hmoon village within Doi Inthanon National Park, and Baan Hmong Doi Pui and Baan Mae Sa Mai within Doi Suthep-Pui National Park, tend to obtain more support from Sub-district (*Tambon*) Administration Organisations and the RPF. This means that while in theory funds should be distributed evenly, this is often not the case.

Social Capital

All participating Pga k'nyau and Hmong villages have continued to develop their livelihood strategies and environmental management practices. They have done this through their social networks with conservation NGOs e.g. Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT), the Forest People Program (FPP), and Sustainable Development Foundation (SDF) in Chiang Mai province. This social capital is a vital aspect of the development of co-management initiatives in the Parks. These NGOs also support the livelihood development projects in these villages through the development of co-management initiatives that involved with a wide range of national park stakeholders. The Department of National Parks, Wildlife and Plant Conservation (DNP) carries out co-management initiatives to achieve long-term sustainable management goals whilst supporting the livelihoods of the Indigenous hill tribe communities. The sustainable development of co-management initiatives needs consistency, transparency and accountability to enhance the national park management and improve Indigenous people livelihoods (J. B. Bennett & Dearden, 2014; N. Bennett, 2010). Thus, it is necessary to develop an understanding of the governing institutions in natural resource management and diverse perceptions of sustainable livelihoods as a way to encouraging equal empowerment of hill tribe people through the collaboration of local government and non-government organisations (NGOs).

Financial Capital

All participating communities explained that their financial capital has been established through the commercial agriculture and community fund development. Four participating

communities have developed community-based ecotourism (CBE) enterprises. Some households in the communities also produced handicraft products for selling to tourists. Apart from selling agricultural products, two Pga k'nyau and two Hmong study villages have developed small businesses such as, handicrafts and CBE to augment their income. Due to the limited availability of land, communities need to develop more efficient and sustainable agricultural practices requiring more capital (e.g. machinery, fertilizer, water, and pesticides). Despite evenness in funding from the RPF to all communities, some communities' initiatives are more developed and therefore more successful than others. The community fund has provided a financial and social safety net and contributes to resilience and self-sufficiency in times of shock. However, mismanagement of funds by local leaders has been reported as the cause of community fund insecurity. Many community members reported that their incomes derived from agriculture, ecotourism and remittance from villagers who work outside the community. However, they explained that they get paid less than most Thai citizens due to lack of education and discrimination.

Physical Capital

Over the past two decades, the development of infrastructure (roads and buildings) have facilitated rapid establishment of mass tourism in the national parks. However, in some instances, unsustainable management practices have led to environmental pollution and with the concomitant rise in livelihood vulnerability. The participating villages do not have well-constructed all season roads to the city centre to sell their agricultural products. The development of community-based ecotourism (CBE) in the two participating villages residing in Ob Luang National Park is also stilted. Improved infrastructure is needed particularly for road access to hill tribe villages in each national park.

7.2.3 Transforming Processes and Structure

The importance of local and Indigenous communities participating in conservation has been highlighted in the Thai constitution (1997) (Johnson & Forsyth, 2002). The constitution also emphasises the need for the involvement of local and Indigenous communities in collaborative natural resource management (Johnson & Forsyth, 2002; Nepal, 2002). The consideration of community rights and natural resource utilisation has been highlighted in Thailand's conservation policies and socio-economic development plans for achieving the sustainable management of its national parks (Sims, 2010).

Since 1998, the Thai government has developed co-management initiatives as a participatory approach that enables the Indigenous hill tribe communities to create and manage their community-based ecotourism (CBE) and community-based natural resource management (CBNRM) (Johnson & Forsyth, 2002). As a result, the development of co-management initiatives is a vital part of the current management systems of Northern Thailand National Parks and the development of Indigenous hill tribe communities' livelihoods. Across all the research participants, the national park management was widely discussed regarding its effective conservation practices, co-management initiatives, and sustainable development goals. The achievements of national park management goals are also strongly influenced by perceptions of the impacts experienced by local institutions and communities. Their perspectives and traditional knowledge of natural resource management and governance are important and need to be considered for improving the current national park management through the collaborative policy-making. However, the findings reveal that within the current management of national parks, the Indigenous hill tribe communities still lack a genuine opportunity to participate in the policy-making process, which is still characterised by top-down decision making from the central government level.

This study found no noticeable differences in the approach to conservation among the six Indigenous hill tribe communities (the Pga k'nyau and the Hmong people). However, the restrictions of land use and socio-economic development pressures are forcing them to adapt their livelihood strategies for sustaining their living and maintaining their environment. Additionally, the conservation policies of Thailand's national parks have focused on the importance of community-based conservation in relation to reducing deforestation problems and towards achieving sustainable livelihoods for the Indigenous communities (T. Myllyntaus, Hares, & Kunnas, 2002).

In the six case study sites, many villagers believed that community-based conservation has been developed as livelihood strategies to manage and conserve their surrounding forests and natural resources. Many of the villagers that were interviewed expressed the opinion that the development of community-based conservation has enhanced their social responsibility and environmental awareness. They expressed both positive and negative views about their livelihood practices. Over past decades, the management of national parks has developed co-management initiatives to support the roles of Indigenous hill tribe communities, particularly in conservation activities and collaborative policy-making. However, this study identified a

need for improved consistency and transparency in the process of co-management and collaborative policy-making in these communities.

7.2.4 Livelihood Strategies and Outcomes

To protect remaining forest areas in Northern Thailand, the Royal Forest Department (RFD) has developed several conservation policies. They have managed zoning systems, such as watershed areas, forest reserves, and community forest areas, by separating the conservation and residential areas within the national parks (Aparasit, 2001; Johnson & Forsyth, 2002). National Park Regulations and outsider influences have changed the traditional livelihood practices of the Indigenous people (Dearden *et al.*, 1996) and the pressures of socio-economic development and trends have impacted upon their livelihoods (Dearden *et al.*, 1996). Thus, villagers have had to adapt their livelihoods and build social networks to deal with changes, pressures, and limitations. They have had to seek new opportunities to improve their quality of life and socio-economic well-being within the national parks.

In the studied villages, the livelihoods of the Indigenous hill tribe people have changed in four main ways. Firstly, the use of slash-and-burn agriculture has reduced, with cash crop cultivation and organic farming taking its place to some extent. Secondly, community-based ecotourism (CBE) has been developed, particularly among the Pga k'nyau people at Baan Mae Klang Luang and Baan Pa Hmoon villages, and the Hmong people in Baan Hmong Doi Pui and Baan Mae Sa Mai villages. Thirdly, community-based natural resource management has been established within the six villages. Finally, some Pga k'nyau and Hmong villagers prefer to find contract work in Chiang Mai town centre and live in urban areas to gain more opportunities for alternative sources of income as well as for further education.

The degradation and disappearance of forests has contributed to the loss of traditions, in particular, those related to forest resources. Many young people seek alternative livelihoods and other opportunities to increase their family income. Some are not interested traditional farming, but they have turned to cash crop cultivation instead. They also prefer to use new forms of technology for communication, such as, mobile phones, the internet, laptops, and computers, and encourage their parents to use machines for cultivation and harvesting instead of traditional methods. Some villagers in the six communities already use agricultural machinery, such as, fertiliser spreaders, cultivators, and tractors, for cultivation and

harvesting. Other villagers continue to use traditional agricultural practices, which also saves money, fuel, and maintenance costs.

Even though adaptation of livelihood strategies has had positive outcomes in terms of socio-economic benefits and to some extent improvement of the environment, indigenous hill tribe communities still have limitation of land use, and have uncertainty in their land rights. Moreover, traditional agricultural practices for household consumption (e.g. endemic crops) are shifting towards both mono- and mixed- cash crop. As a result, traditional farming system knowledge has been lost. Slash-and-burn agriculture was an essential part of the Pga k'nyau's livelihoods as well as identity (Barnaud, Page, Dumrongrojwatthana, & Trébuil, 2010; Laungaramsri, 2002; Tomforde, 2003; Trébuil, 1997). Thus, this loss of this means that local knowledge might not pass to the young generation.

Changes in Traditional Agricultural Practices

Recently, The Royal Project Foundation (RPF) has encouraged the communities to cultivate cash crops to generate more incomes, and to replace slash and burn shifting cultivation. However, crash cropping has potential to contribute to more significant deforestation than slash and burn. The concentration of mono- and mixed cash crop cultivation may be considered as a contemporary form of the 'Green Revolution' and this mainly exists in agricultural developing countries to respond to food security for population growth and to boost economic growth; nevertheless, the Green Revolution results in negative impacts on the environment such as climate change (Pingali, 2012).

Both mono- and mixed cash cropping does not only bring more incomes and job opportunities, but also modern agricultural knowledge leading to agricultural innovation for local people. However, this modern agricultural practice can result in undesirable impacts on society and the environment including land use degradation and biodiversity loss. Using tractors to clear land is an obvious example of destroying soil structure as well as soil microorganisms. Besides, seeds provided by RPF include introduced species that have dominated land and compete with endemic crops. Communities have very limited land use and their allocated land is not guaranteed in terms of ownership. Also, it is noted that communities have to increase water storage and set up irrigation systems to supply to cash crops, especially in dry season as growing cash crops needs more water compared to traditional crops. This is also a form of agricultural intensification.

Furthermore, mono- and mixed cash cropping agriculture has caused changes in indigenous hill tribe community lifestyles and agricultural practices. These types of agricultural practices are also considered to consume more time for villagers than traditional farming systems, leaving the villagers with less time for gathering forest products, making handicrafts and socialisation. Reduced time spent gathering forest products has also resulted in a decline in level of local ecological knowledge of forest products and usage (Tungittiplakorn & Dearden, 2002). Previously, products made by villagers were mainly used in households, but now the products are supplied to markets and factories. It is noted that villagers have to deal with uncertain market demands.

The introduction of modern agricultural technologies has also displaced some practices of traditional agriculture systems among the Indigenous hill tribe communities in Northern Thailand (Chiengthong, 2003; Tungittiplakorn & Dearden, 2002). Already, several types of local plants have been lost by being replaced with cash crops. The variety of cash crops grown in permanent fields is also smaller than the range of local plants grown using traditional systems (Dearden *et al.*, 1996; Santasombat, 2003). This raises the question as to how to preserve the genetic diversity of local crops, such as, upland rice species that are cultivated among the hill tribe communities (Foppes & Ketphanh, 2004).

Over four decades, the Thai government and the Royal Projects have supported the Pga k'nyau and the Hmong with alternative or cash crop agriculture to increase their household incomes (Tungittiplakorn & Dearden, 2002). Intensification of cash crop cultivation has led to soil and water contamination issues (Dearden, 2002; Tungittiplakorn & Dearden, 2002). Thus, these problems have to be considered as an ongoing environmental issue. Dearden (1995) and Michaud (1997) noted that the problem of the market value of cash crops has changed over time and has led to the expansion of agricultural areas into protected forest in order to increase productivity. In the case study sites, the Pga k'nyau and Hmong people have had to increase cash crop agriculture on allocated areas for household consumption and sale (for surplus products). The price of agricultural products has been changing over time based on prices at the local market, while some of those of agricultural products have been influenced by middlemen (Thai local) who buy at lower prices than those received at the market. Due to the cost of machinery and fertiliser, there is also the risk of debt among the indigenous hill tribe communities (Rerkasem, 2003; Rerkasem & Rerkasem, 1994). Many villagers complained about the cost of machinery and fertiliser for cultivating cash crops.

Changes in Social and Economic Development

Results showed that both internal and external socio-economic development pressures have influenced the traditional lifestyles of the Indigenous people. In the six study sites, many interviewees explained that the younger generation have rejected simple living in the village. They are more money-oriented and focus on earning their living; they often seek their opportunities for higher education and greater work opportunities in Chiang Mai centre and/or other places. Some of the younger interviewees explained that although they had moved from their community, they still had an interest in the old traditions and would like to learn these from their parents. However, the limited level of education available in their villages forced them to study in other towns to gain higher levels of education. Although some frequently visited their villages, some were restricted to just sending back money or visiting for special events. Changes in traditional livelihoods are mainly caused by influences resulting from external development pressure and socio-economic changes (Dearden *et al.*, 1996). The Pga k'nyau and Hmong have had to comply with both land regulations and National Park regulations.

With respect to the changes in Indigenous hill tribe communities, six broad observations can be made regarding socio-economic well-being. Firstly, there is increasing demand for agricultural land caused by the need to augment household income (Dearden, 1997; Dearden *et al.*, 1996). The amount of land available for agriculture has reduced due to the allocation of land for forest for conservation (Sato, 2000). Secondly, an intensification of cash crop cultivation and the shortening of fallow periods, which have led to the loss of soil fertility and food security (Sato, 2000). Thirdly, socio-economic changes have emerged due to both national and international development programs, the increasing need for cash, and migration to urban areas (Dearden, 1997; Dearden *et al.*, 1996; Hirsch, Warren, & Murdoch, 2002; Pettenella, 2003; Warren & Pinkston, 2000). Fourthly, an improvement in roads and other infrastructure has contributed to the development of Indigenous hill tribe communities by increasing their employment opportunities and their access to markets and urban areas (Cropper, Puri, & Griffiths, 2001; Dearden, 1995; Ferraro *et al.*, 2011; Rigg, 1993; Sims, 2010). Fifthly, loss of biodiversity has been caused directly and indirectly by the modernisation of agricultural practices, such as introduction of agricultural machinery, mono-crop cultivation, and chemical fertiliser use (Hirsch *et al.*, 2002; North, 1995; Omamo, 1998; Warren & Pinkston, 2000). Finally, Indigenous hill tribe communities' livelihoods have also

been affected by the magnification of vulnerability factors, such as forest fires and the introduction of exotic tree species such as rubber and eucalyptus, which are not appropriate plants and acidify the soil which causes environmental degradation (Hirsch *et al.*, 2002; Omamo, 1998; Warren & Pinkston, 2000).

Although the adaptation of livelihood strategies has had positive outcomes, there have also been negative impacts such as, limitations on land use and socio-economic development pressures. In general, the change in traditional agricultural practice was considered a loss in traditional farming system knowledge, particularly for the younger generation. Slash-and-burn agriculture was an essential part of the Pga k'nyau's worldview, traditional farming practice, and of their identity (Barnaud, Page, Dumrongrojwatthana, & Trébuil, 2010; Laungaramsri, 2002; Tomforde, 2003; Trébuil, 1997). Cash crop cultivation may lead to detrimental environmental impacts as emphasised by many researchers (Barnaud *et al.*, 2010; Delang, 2002; Tomforde, 2003). Dearden (1995) and Michaud (1997) noted that the problem of the market value of cash crops has changed over time and has led to the expansion of agricultural areas into the protected forest in order to increase productivity.

The Integration of Traditional Ecological Knowledge in Agricultural and Environmental Management Practices

In Northern Thailand's national parks, some hill tribe communities still employ traditional slash-and-burn and shifting cultivation practices, and rotational agriculture within their community areas (Chiengthong, 2003). This practice has been regarded as a cause of deforestation and forest fires in some forest areas in Northern Thailand (Chiengthong, 2003). However, Forsyth and Walker (2008) argue that both slash-and-burn and rotational agriculture has led to some recovery of biodiversity and improved top soil nourishment by increasing the biomass from the burned and decayed plants. These two agricultural practices are significant for the hill tribe communities (Laungaramsri, 2002). For example, it is well established that the long fallow cycle can improve the diversity of trees and non-timber products (Forsyth & Walker, 2008; Tomforde, 2003). Thus, stopping slash-and-burn agriculture and rotational cultivation has had a negative effect on biodiversity (Gansberghe van, 2004; Timo Myllyntaus, 2002). The reduced variety of trees, non-timber products, and local crops has potential impacts on people's livelihoods and food security (Dearden et al., 1996; Forsyth & Walker, 2008; Santasombat, 2003).

Currently, local traditional ecological knowledge is now being incorporated into cash crop cultivation and environmental education (Chiengthong, 2003; Tomforde, 2003). This has led to changes in the traditional slash-and-burn agriculture among Indigenous hill tribe communities as a result of economic incentives for commercial purposes (Rerkasem, 2003; Rerkasem & Rerkasem, 1994), such as selling their traditional handicraft and agricultural surplus in the local and hill tribe markets. In this study, changes in the agricultural practice of cash crop cultivation were considered as part of the livelihood development of the Indigenous hill tribe communities in the study sites. However, the intensification of cash crop cultivation led to soil and water pollution when some hill tribe farmers employed pesticide and chemical fertiliser (Chiengthong, 2003). This study found that the Royal Project Foundation is an active organisation that supports the use of organic fertiliser and the green house for cultivating cash crop among the hill tribe communities.

In my study, many interviewees believed that they had the right to manage agricultural land and establish their small water catchment areas for agricultural purposes. Many Pga k'nyau people expressed their preference for the forests to be managed according to their own traditions, though they appreciated government involvement. The study by Ayudhaya and Ross (1998) of Mae Lu, the Pga k'nyau village in Mae Chaem, also yielded the same consistent findings (Ayudhaya & Ross, 1998; Laungaramsri, 1998, 2002). However, they no longer have the same full rights on the land and access to customary resources as they had before the establishment of national parks (Ayudhaya & Ross, 1998; Laungaramsri, 1998, 2002).

The Pga k'nyau and the Hmong people share some similarities. Both believe in the relationships between the spirits and nature and have provided names for each spirit in nature, such as the water, forest, and mountain spirits (Santasombat, 2004). They respect all spirits as guardians who protect their communities. Both communities believe that people have a responsibility to protect their surrounding natural resources and use them carefully and sensibly, and to serve only essential livelihood needs. The beliefs of both the Pga k'nyau and Hmong people thus support sustainable land use and natural resource conservation (Santasombat, 2004).

In Pga k'nyau and Hmong villages, many rituals representing the significance of trees are still conducted in their sacred forests. All six studied villages combined their ecological knowledge and developed their community-based natural resource management and

conservation activities. However, some participants revealed their concerns about the discontinuation of traditional culture in the younger generation. Although this seems largely to be the case in the villages studied, other findings have been indicated that Christianity has been integrated into traditional beliefs and rituals (Santasombat, 2004). In this study, the introduction of Christianity has influenced the younger generations of the Pga k'nyau and Hmong communities. However, the Park officials of each village have tended to continue their traditional beliefs and rituals while adopting Christianity as an introduced religion. In contrast, Ylhäisi (2000), who conducted fieldwork in relation to livelihood research with rural communities in Tanzania, argued that when Islam and Christianity were introduced into the communities, the new traditions contributed to changes in the culture and rituals. In Baan Hmong Doi Pui village, many villagers explained that the Park official of the community and committee (as community leaders) have significant roles in sustaining traditional knowledge, including culture and rituals. These roles have been conducted through community initiatives, such as the uses of medicinal plants and the promotion of traditional culture in the village schools.

In the six villages studied, the older people of the Pga k'nyau and the Hmong discussed the causes of the changes and the impacts of traditional religion and cultures. These causes encompass inter-marriage (marrying with Thai or other ethnic groups), cultural assimilation with other ethnic groups, and the introduction of Christianity. These causes also led to the loss of some traditional Pga k'nyau and Hmong culture and rituals concerning the beliefs of Buddhism and animism. This has also led to cultural erosion and affected the transfer of traditional knowledge and awareness of unique rituals. Overall, they summarised these factors as being unavoidable and were accepted by some groups of the Pga k'nyau and Hmong. Many community members expressed their concern about the decline of some cultural values of the Pga k'nyau and Hmong because the younger generation tend to absorb the new culture that came with the outsiders (for example, visitors and tourists) who visit their village. The rapid development of tourism outside their villages and the introduction of new technologies and communication systems, such as televisions, mobile phones, and the internet, are believed as an influential factor that led to the changes of traditional livelihoods among the Pga k'nyau and Hmong villagers, particularly in the younger generations.

7.3 The Development of Decentralisation and Co-management Initiatives

In 1997, the Thai government announced the new Thai Constitution. It then promoted the launching of the Decentralisation Promotion Act in 1999 (Charas & Weist, 2010; Nagai, Funantsu, & Kagoya, 2008; Pragtong, 2000). This process brought massive and ongoing changes to both the central government sectors and local administrative organisations (Charas & Weist, 2010; Nagai *et al.*, 2008; Pragtong, 2000). Since 2001, the Thai government has created a new local administrative organisation (LAO), called the 'Tambon Administrative Organisation (TAO)', to assist with co-management initiatives. The main responsibilities of the TAO are to govern the local communities in the sub-districts and rural areas. It also administers the construction of infrastructure and healthcare centres (Pragtong, 2000). The rationale behind this process is a form of political change which enhances the participation of local communities, particularly in conservation initiatives (Garden *et al.*, 2006; Krueathep, 2004). It also encourages Indigenous hill tribe communities to be involved in environmental management (M. Dupar & and Badenoch, 2002; Pragtong, 2000). However, the responsibilities of decentralisation can be a heavy load for the TAO[22] when their responsibilities increase more than their resources and capabilities.

Furthermore, the local administration does not necessarily prioritise natural resource management, but also focuses on the development of infrastructure. However, the TAO is not the only organisation that works on natural resource management. Recently, many NGOs have been participating in the process of decentralisation (Chiengthong, 2003). Government officials have also worked with NGOs, particularly in community networks, conservation, and co-management initiatives, as was also found in the study sites. Thus, partnerships between local institutions, NGOs, and communities are a significant part of environmental management practices. They provide a possible channel or pathway to express the proposals and ideas that could be included in the policy-making process (M. Dupar & and Badenoch, 2002; Pragtong, 2000).

In some cases, decentralisation has led to a loss of forest areas, as has occurred in Indonesia (Capistrano & Colfer, 2005). However, the legal framework and administration systems in

[22] A part of the local administration organisation. The TAOs are the Tambon Administrative Organisation in Thailand's administrative systems and are now established in 7,400 local sub-district units, which are a part of 77 Provincial Administrative Organisations (PAOs) (CARE, 2001, 2002; Charas & Weist, 2010). Since 1997, the TAOs are a symbol of the decentralisation of Thailand's administrative systems, which also involves natural resource management systems (CARE, 2001, 2002; Charas & Weist, 2010).

Thailand have better practices than Indonesia because of the implementation of Thailand's constitution and the TAO Act 1997 (Capistrano & Colfer, 2005). The decentralisation processes refer to the involvement of both sub-district (*Tambon*) which comprises many villages (*Moo Baan* in Thai). There are concerns that hinder the government in relation to implementing community forestry law in terms of the conservation interests and local participation (Charas & Weist, 2010). The implementation of community forest is a significant step for those involved in forestry in order to support community-based conservation and the development of co-management initiative, finding the right balance between conservation and livelihood sustainability.

Decentralised natural resource management can only be successful when benefits are increasingly shared with local institutions and Indigenous people (M. Dupar & Badenoch, 2002; Sayer & Maginnis, 2005). Effective decentralisation should be planned with lessons learnt from previous practices to develop the processes of transferring rights, assets, entitlements, and other responsibilities to local institutions and Indigenous people (Sayer & Maginnis, 2005). In addition, consistent support for community-based management would further increase villagers' motivation and encourage other communities to become engaged (Mukamuri, 2000).

Since 1999, co-management has been adopted and promoted in many of Thailand's national parks. The implementation of co-management initiatives involves multi-faceted organisations in the process of decision-making. This means that Indigenous communities are involved in collaboration and hold responsibilities in natural resource management and conservation (Parr, 2007; Parr, Jitvijak, Saranet, & Buathong, 2008). Thus, the sustainable development of co-management initiatives can provide benefits for management and conservation purposes and can help resolve conflicts over natural resource use (Parr, 2007; Parr *et al.*, 2008; Ribot, 2002). The development of co-management initiatives requires collaboration between national park officials and local people in order to work effectively (Ferguson & Chandrasekharan, 2005; Ribot, 2002). However, the participation of local people must be meaningful (Larson, 2005).

Recent co-management initiatives have developed through the co-operation of national park stakeholders and Indigenous communities (Emphandhu & Chettamart, 2003; Englehart, 2008). Local empowerment and participation requires appropriate co-management practices, particularly in regard to 'learning by doing' in the development of adaptive co-management

(Parr, 2000; Parr *et al.*, 2008). Local empowerment and participation have proven to be the best incentives for the management of national parks, not only in Thailand, but also in other countries (Parr, 2000; Parr *et al.*, 2008). Agrawal (2005) found that the motivation for conservation in an Indian community was related to their way of life and the use of the forest. The villagers were willing to protect their forests and natural resources in order to sustain their livelihoods, and they are also supported by government. Thus, co-management initiatives for sustainable natural resource management must consider the involvement of government authorities and local and Indigenous communities in order to be successful (Agrawal, 2005; Barrett, Brandon, Gibson, & Gjertsen, 2001).

In this study, it was found that the management of national parks has been evolving through the relationships between national park stakeholders and Indigenous communities. Currently, collaboration between the Forest Restoration Research Unit (FORRU), Royal Project Foundation, and the Department of National Parks, Wildlife and Plant Conservation have supported the reforestation projects among the six studied villages. In three Pga k'nyau villages and three Hmong villages, the active organisation is the Royal Project Foundation that introduced new agricultural techniques such as organic farming and cash crop cultivation.

Results show that CARE and IMPECT projects supported the use of community maps to establish a clear picture of village boundaries. An example of empowerment in North-eastern Thailand was when district maps were drawn and used by the villagers for claiming their territory to prevent the expansion of national parks into their community areas (Fujita, 2003). Thus, the community mapping method was used to communicate with the national park officials and the researcher an understanding of the village structure and access to their livelihood resources. Additionally, CARE has promoted the watershed networks at the community level, as well as other networks, such as conservation.

The results show that all participating villages are actively involved in co-management initiatives such as The Joint Management of Protected Areas (JOMPA[23]) and the Whakatane Mechanism. The two Hmong villages in Doi Suthep Pui National Park have participated JOMPA since 1981. One Hmong and one Pga k'nyau village in Ob Luang National Park have

[23] Danish Cooperation for Environment and Development (DANCE) is a part of Denmark government that provides the management funds to the JOMPA project. The primary purpose of JOMPA project is to strengthen the collaborative natural resource management between National Park authorities and the Indigenous people reside in and adjacent to the national park areas.

participated in JOMPA since 2004 and then joined in the Whakatanae mechanism in 2012. The two Pga k'nyau communities in Doi Inthanon National Park joined JOMPA in 2012. The local participation in natural resource management is an integral part of adaptive co-management of the forest, and it also promotes empowerment (Berkes, 2004). In the Ob Luang National Park, the research participants from the Pga k'nyau village (Baan Huay Ka noon village) and the Hmong village (Baan Pa Kluay village) also indicated that since 2003, the JOMPA projects have introduced efficient co-management strategies to their villages that are still used today. The JOMPA project emphasised cooperation between national park officials and local people when surveying the boundaries of the forest reserves and community areas. This empowered local people to participate in decision making related to the protection of natural resources, further supporting sustainable livelihood management. The Pga k'nyau and Hmong agreed that the JOMPA projects not only resulted in efficient collaborative national resource management not only between officials and villagers, but also between villages.

Since its inception at the IUCN Commission on Environmental, Economic and Social Policy (CEESP) 'Sharing Power' conference in Whakatane, New Zealand, in January 2011, the Whakatane Mechanism has been piloted in two places: at Mount Elgon in Western Kenya and most recently in the Ob Luang National Park in Northern Thailand. The aim of the Whakatane Mechanism is to assess the situation in protected areas and, where people are negatively affected, to propose solutions and implement them. The Mechanism also aims to identify, celebrate and support successful protected areas where the new paradigm of conservation is being implemented.

In April 2012, the new 'Whakatane Mechanism'[24] co-management initiative was introduced by the Forest Peoples Programme (FPP) and employed in Baan Pa Kluay and Baan Huay Ka Noon villages within Ob Luang National Park. The pilot Whakatane Assessment in Ob Luang was also carried out jointly, with a team including staff from IMPECT, Thailand's Department of National Parks, Wildlife and Plant Conservation, Forest Peoples Programme, IUCN, local NGOs, Indigenous peoples and local community networks (the Watershed Network and Highland Nature Conservation, Chomthong). This co-management approach provided a blueprint for good partnerships between villagers and National Park officials in

[24] The Whakatane Mechanism is a new strategy of co-management. Its mechanisms strategy was adopted from conservation practices in New Zealand. This co-management initiative was started in Northern Thailand National Parks in 2012 and is still expanding to other national parks in Thailand.

order to enhance the efficiency of collaborative management. To achieve the positive results of existing co-management initiatives, the potential strategies include the development of community-based natural resource management by enhancing local empowerment and participation in a wide range of conservation and environmental protection activities. Base on the Whakatane Mechanism, the consideration of Indigenous communities' local knowledge through their traditional practices has also provided effective natural resource management for generations and also helps to maintain both traditional culture and natural resources.

Both the JOMPA and Whakatane Mechanism initiatives focus on strengthening good cooperation and partnerships between Indigenous hill tribe communities and national park officials in terms of managing the protected areas and conservation activities. In general, the view of the participants from the Ob Luang National Park was that the two projects had contributed to its effective co-management that should continue for the long term. The main conservation activities are reforestation, watershed area and reservoir management, and the establishment of firebreaks. Reforestation projects were carried out through community-based conservation practices, together with the co-management of national park stakeholders and Indigenous communities. This also led to positive outcomes within the three selected national parks in this research. Despite the success of co-management initiatives such as JOMPA and participatory practice such as the Whakatane Mechanism in developing existing collaborative natural resource management practices, there is a need for continued improvement of this co-management initiatives and participatory mechanism in the long-term management of national parks.

7.4 The Development of Community-Based Conservation

There have been many government-initiated conservation development projects since the establishment of national parks in Northern Thailand. Indigenous hill tribe communities residing in these national parks are all different from one other and have their unique cultures, traditional knowledge, and livelihood strategies that enable them to live within the boundaries of the national parks while complying with applicable regulations. The purpose of this section is to discuss the Indigenous people's perceptions of their CBE and CBNRM. The purpose of CBE and CBNRM is to conserve natural resources while also enhancing the quality of life among hill tribe communities within the protected areas and national parks.

7.4.1 Community-Based Ecotourism

In Northern Thailand's national parks, many indigenous hill tribe communities employed the CBE as a part of their alternative livelihood strategies, particularly in the Pga k'nyau and Hmong communities (Anan, 1998; Hvenegaard & Dearden, 1998a, 1998b; Laungaramsri, 1998). The involvement of CBE among both Pga k'nyau and Hmong communities relates to their economic incentives or their motivation to partipate in tourism business, which increase their household incomes (Dowling, 1996; Dwyer, Forsyth, & Spurr, 2004). The development of CBE has developed to alleviate poverty problems for Indigenous hill tribe communities residing within national park areas (Dowling, 1996; Hvenegaard, 1996; Kontogeorgopoulos & Chulikavit, 2010). This development also influenced the local and Indigenous communities' decision making and their environmental management practices that supports their socio-economic well-being (Worah, 2002). For all stakeholders, economic incentives can have a significant role in creating acceptance of conservation when using land (Kaarakka & Holmberg, 1999).

In this research, two Pga K'nyau villages in Doi Inthanon National Park and two Hmong villages in Doi Suthep-Pui National Park have developed their CBE that allow them to have additional incomes apart from agricultural products. The results of this research show how the development of CBE brings employment opportunities for small businesses. CBE business has increased the number of tourists in four villages: Baan Hmong Doi Pui, Baan Mae Klang Luang, Baan Mae Sa Mai, and Baan Pa Hmoon. However, Baan Huay Ka Noon and Baan Pa Kluay villages require support from National Park officials and sub-district administration organisations for improving infrastructure and related facilities. The development of infrastructure and electrical supplies is of particular importance for the two selected communities in Ob Luang as they are interested in CBE. It could also boost their sustainable livelihood development in terms of household incomes. However, some participants from Ob Luang National Park expressed concerns about changes to their traditional lifestyles and cultures if CBE was developed in their villages, particularly regarding the environmental and social impacts.

7.4.2 Community-Based Natural Resource Management

In Northern Thailand, community-based natural resource management (CBNRM) has been developed among the Indigenous hill tribe communities and other local people. CBNRM has

been acknowledged as a way of enhancing community-based conservation initiatives in order to protect the environment and preserve the available natural resources. CBNRM was initially developed through financial and educational support from the Royal Project Foundation. Subsequently, though it has combined their conservation practices and traditional ecological knowledge (Dowling, 1996; Hvenegaard, 1996; Kontogeorgopoulos & Chulikavit, 2010).

CBNRM practices have developed and changed over time integrating new and traditional knowledge (Dowling, 1996; Hvenegaard, 1996; Kontogeorgopoulos & Chulikavit, 2010). However, socio-economic development pressures have led to negative impacts on the environment that can affect the livelihoods of Indigenous hill tribe communities. National Park officials have also introduced new aspects of environmental management including in national policies on natural resource management that take a top-down approach (Dearden *et al.*, 1996; Emphandhu & Chettamart, 2003; Forsyth & Walker, 2008; Fujita, 2003). Since the late 1990s, the management of national parks focus has shifted and has adopted a more participatory approach through the development of co-management initiatives. In addition, Indigenous hill tribe communities have played a more active role in negotiating with national park officials with the intention of participating more in conservation initiatives (Inter Mountain Peoples Education and Culture in Thailand Association (IMPECT) & Forest Peoples Programme (FPP), 2006; International Centre for Environmental Management (ICEM), 2003). Although there have been some co-management initiatives, greater consistency in management is still needed to enhance the development of sustainable livelihoods.

In this study, the six study communities have adopted CBNRM as one component of their livelihood strategies to achieve sustainable livelihood outcomes. The national park officials and Indigenous hill tribe communities residing in the national parks have two different perspectives about CBNRM and traditional and introduced conservation practices. The research findings found that the Pga k'nyau and Hmong communities have their traditional ecological knowledge and a willingness to conserve the forest and natural resources to sustain their livelihoods. National park officials have their responsibilities in managing and regulating the national parks and preventing detrimental impacts on biological diversity. Participants explained that they have carried on reforestation activities through their CBNRM and co-management initiatives. They also require external supports in terms of budget and collaboration from national park officials, NGOs and academics to improve and extend co-

management initiatives in national parks. Despite this, some government and national park officials continue to regard hill tribe people in the Northern Thailand national parks as a problem and apply strict regulations restricting their activities.

This study found that reforestation activities undertaken as a part of CBNRM have enhanced ecological conservation and raised environmental awareness among the six selected hill tribe communities. The reforestation activities and research programs also provided casual or part-time employment some villagers, and the activities in some villages are now volunteer projects with limited funding from external organisations. However, in Baan Hmong Mae Sa Mai village, the Forest Restoration Research Unit (FORRU) is an active academic organisation that works with villagers and contributes to academic research and offers financial support. Griffen (2001) suggests that the motivation for forest conservation can be increased when Indigenous people realise the benefits of conservation activities.

Many villagers explained that they developed their own strategies of CBNRM, such as waste management, the establishment of firebreaks, and reforestation, for supporting community members in conservation activities. The development of CBNRM strategies focuses on how to combine their traditional environmental knowledge with the existing natural resource practices while also developing sustainable livelihood strategies among the community members. They also explained that the development of community-based conservation and its management continuously change and adapt to new conditions. An example of this is how local people have absorbed new technology, such as the use of Geographical Information System (GIS) maps, aerial photographs, or satellite images to negotiate with national park officials, particularly to do with the overlapping areas between the national parks and their communities (Santasombat, 2003, 2004). New technology can enhance the efficiency of the management of protected areas and national parks through contributing to improve land management.

7.5 Conclusion

In order to achieve sustainable livelihoods, the case study communities have had to develop and adapt their livelihood strategies, particularly in the participation of conservation initiatives. Consequently, this study seeks to understand how Pga k'nyau and Hmong communities residing in Northern Thailand national parks are addressing internal and external vulnerability contexts that cause everyday livelihood challenges. To continue

sustaining their livelihoods, both Pga k'nyau and Hmong communities have adapted their livelihood strategies by developing sustainable agricultural systems, community-based ecotourism, and participating in co-management initiatives. However, these communities are facing rapid socio-economic transformations and development. Although communities are confronted with a limitation of livelihood resources, National Park officials, NGOs, and the Royal Project Foundation have continually supported them since Northern Thailand national parks were established.

This research found that multifaceted relationships among national park stakeholders and indigenous hill tribe communities created dynamics of power related to co-management initiatives and collaborative policy-making. Furthermore, this study revealed the complex interplay and competing needs between national park stakholders and Indigenous hill tribe communities in relation to economic benefits, political wills and conservation interests. Such realities on the gound are too complex and difficult to be solved by changing conservation management schemes. A comprehensive reconciliation process is needed to respond to dynamic changes in political and socio-economic situations related the existing issues of national parks. A major challenge revolves around reconciling ethical principles and effective conservation approaches. However, national park regulations and national laws are still not having any quaranteeing for indigenous hill tribe people's land rights within national parks. Under government administration, the retention of the rights of local and indigenous communities to access and use natural resources are generally recognised with varied outcomes depending on the legal frameworks and historical backgrounds of the national parks. It was found that land rights and other resource rights are still delicate issues, despite legal and policy changes taking place in Northern Thailand's national parks.

In the six selected communities, Indigenous people have had to adapt their livelihood strategies in response to the development of national park management. These communities developed their own community-based conservation, such as CBE and CBNRM, as part of their social responsibility and environmental awareness. The development of community-based conservation is a significant part of their sustainable livelihood strategies and the development of co- management initiatives in Northern Thailand's national parks.

CHAPTER 8: CONCLUSION AND RECOMMENDATIONS

8.1 Introduction

The overall aim of this study was to investigate the diversification of the current livelihood strategies and natural resource management practices among six hill tribe communities residing in three national parks in Northern Thailand, using DSLF as an analytic tool. The selected national parks were established in different decades (Doi Inthanon National Park in 1972, Doi Suthep-Pui National Park in 1981 and Ob Luang National Park in 1991) as presented in Chapter Five. This meant that the six case study sites have developed their livelihood strategies and environmental management practices in response to different management systems in each national park. Therefore, this study also explored the impacts of national park management on their livelihoods to understand how they develop strategies and shape their natural resource management practices.

The three Pga k'nyau and three Hmong villages continue their strong spiritual and cultural relationships with the forest areas and other natural resources through their Indigenous knowledge, practices, beliefs and rituals. The proximity of their settlements to protected forest areas within Northern Thailand's national parks leads to misconceptions and criticisms of their agricultural practices by national park officials and environmentalists. The hill tribes believe that they protect and care for the forest, as they need it for their livelihood but others maintain their slash-and-burn and shifting agriculture practices destroy the forests (Forsyth & Walker, 2008; Hares, 2009; Johnson & Forsyth, 2002). Subsistence forestation is a complex matter involving many factors and requires a holistic approach in assessment of the causes.

Since 1997, the Thai government began to promote tourism heavily in order to boost economic growth and help lead the country out of the Asian financial crisis. Since then, these three selected national parks have been promoted as ecotourism landmarks in Chiang Mai. This provides opportunities to four of the participating hill tribe communities with Doi Inthanon and Doi Suthep-Pui National Park to develop their own community-based ecotourism (CBE), with supports by both government and non-government organisations. Ob Luang National Park has fewer opportunities in this respect because of the lack of infrastructure and greater distance to the cities. In the two closer national parks, CBE development has provided supplementary incomes to those communities to augment their income from agricultural and handicraft products. The communities residing within Ob

Luang National Park still require improved transportation infrastructure and electricity to enable them to expand their CBE and agricultural enterprises. Currently, these six communities are actively participating in a number of community-based natural resource management (CBNRM) and co-management initiatives that are supported by government departments, non-government organisations and the Royal Project Foundation.

The chapter begins with a summary of the thesis findings, conclusions and recommendations which are presented in Table 8.1. Section 8.2 then elaborates upon the key findings. In particular, Section 8.2.1 considers community vulnerability, Section 8.2.3 livelihood assets, Section 8.2.3 transforming structures and processes and Section 8.2.4 current livelihood strategies and outcomes. Next, Section 8.3 outlines the contribution of the study. Section 8.4 then makes recommendations for community based eco-tourism, co-management and community-based conservation and makes suggestions for future research. Finally, section 8.5 draws final conclusions and brings this thesis to a close.

Table 8.1 Research findings and recommendations for national park management and livelihood development.

CATEGORIES	RESEARCH FINDINGS	CONCLUSIONS	RECOMMENDATIONS
COMMUNITY VULNERABILITY ***Institutional Shocks***	There were sudden and dramatic changes to land use regulations and property rights with the establishment of Doi Inthanon National Park (1972), Doi Suthep-Pui National Park (1981) and Ob Luang National Park (1991). Adopting a traditional Western approach to the management of Northern Thailand's national parks created land use restrictions and impacted upon traditional activities, reduced access to forest areas, and even resulted in imprisonment of individuals in some cases. Despite new natural resource governance relating to the development of co-management and decentralisation, the conflicts over land rights and access to natural resources remain among government agencies, national park officials, and local and Indigenous hill tribe people.	Communities still have a sense of being disenfranchised from their socio-cultural heritage and economic opportunities.	Improve consultation, co-management and collaboration in natural resource management through further decentralisation. Enhance the existing co-management initiatives, emphasising the local and hill tribe communities' participation and empowerment in collaborative natural resource management and democratic decision-making process for seeking a better solution to reconcile the conflicts and solve environmental impacts. There is a need to consider an equally ratio of participants in council particularly in policy-making processes and committee formation to increase the number of community and thereby have greater participation by stakeholders.

Trends	The Royal Project Foundation (RPF) has been working for more than half a century to improve hill tribe communities' livelihoods by providing education and agricultural projects e.g. organic farming systems and cash crop cultivation, including seeds, fertilisers, and monetary support. However, income maximising activities through agricultural intensification has led to negative environmental impacts such as water pollution. There are western capitalist ideas infiltrating community lifestyles especially amongst the young generation of hill tribe communities.	The conversion from subsistence agriculture to cash cropping has resulted in increased vulnerability and debt, particularly for Pga k'nyau communities.	Introduce a more robust adaptive management approach to enhance adequately incorporate traditional farming practices. Provide even support from The Royal Project Foundation (RPF) to facilitate agricultural conversion is needed. Additionally, the monitoring processes of environmental impacts are needed through community-based natural resource management. Encourage the communities to hold on to their unique culture and encourage them to place boundaries around what may and may not enter their village in order to protect their identity.
Seasonality			
Of Agricultural Production	Seasonality causes fluctuations in the quality and a quantity of the communities' agricultural products and this adds to the uncertainty and unreliability of household incomes.	Uncertainty and unreliability of household incomes.	Increase the collaboration needed between the hill tribe communities and RPF to identify appropriate crops with market targets and seasonal spread.
Of prices	Fluctuations in market prices of agricultural products have significant implications for livelihoods.	Uncertainty and unreliability in household income are caused by inadequate information regarding agricultural market and consumer trends.	Provide useful information to the communities in relation to agricultural products and marketing plans for different seasons. This information enables local hill tribe communities to develop their marketing strategies to deal with the rapid changes in local markets particularly in agricultural product prices.
	Problem of oversupply, having the same agricultural product out to the same market at the same time, causes price fall as the result of over demand and vice versa.	Mono cropping vulnerability of the communities when product prices fall.	Encourage better communication between all involved parties to solve problem of land use limitations to increase cropping diversity.

Of employment and related livelihood development opportunities.	Poor conditions of transportation infrastructure in the Pga k'nyau and Hmong villages in Ob Luang National Park cause increased travel and infrastructure costs, which increase investment costs in order to produce and sell their locally grown products. This also reduced employment opportunities. Ob Luang National Park has the least access to the market, therefore has less employment opportunities because of poor transportation infrastructure.	Good condition of transportation infrastructure can support the socio-economic development among the six hill tribe communities. Ob Luang National Park has the least access to the market, therefore has less employment opportunities because of the poor transportation infrastructure.	Improve the existing road transportation infrastructure, to aid communities and their agricultural products in travelling to market and for better employment opportunities for villagers, Pga k'nyau communities in Ob Luang National Park.
LIVELIHOOD ASSETS			
Natural capital	Ongoing deforestation is caused by mismanagement of land use that overemphasises the development of infrastructure for mass tourism to boost economic growth. This contradicts the conservation goals of national park management. Community members also viewed corruption as a key cause of deforestation.	Causes of on-going deforestation are the result of mismanagement of land use and corruption.	Build up and strengthen the relationships based on trust and cooperation among national park officials, policy-makers from central government and the Indigenous hill tribe communities in order to establish policies promoting good governance in national park management and to prevent further deforestation.
	Rapid development of infrastructure to serve mass tourism growth has caused negative environmental impacts such as air and water pollution from waste disposal.	Management issues from the environmental impacts of rapid tourism development such as waste management need to be addressed, especially during the high tourism season of tourism (December, January, and April).	Conduct environmental impact surveillance in a timely manner (e.g. every month in the national parks), and prioritize timing of restoration by targeting at the environmental aspect with the most consideration needed at any given time.
	Participating Pga k'nyau and Hmong communities have their own skills, ecological knowledge and motivation to participate in reforestation and fire	There are differences in skills, methods, and resources available in conservation management practices (e.g. reforestation and fire protection) between government officials and the	Improve efficiency of resource use with greater collaboration of reforestation and fire protection. Encourage collective action by

	protection projects. Conservation management needs to be improved, particularly around communication to enhance fire protection strategies.	Indigenous hill tribes.	including collaboration among the Indigenous hill tribes, Department of National Parks, Wildlife and Plant conservation (DNP), the Royal Project Foundation (RPF) and the Reforestation Research Unit in Chiang Mai University (FORRU-CMU).
Human capital	The Park official of village, his assistant and the committee in each village are responsible for resource management, negotiations with government officials, collaborative working with external organisations and conflict resolution. During community meetings, Park official of the village and committee members inform the community members of all livelihood development projects, conservation initiatives and efforts to reduce land use conflict and improve sustainable livelihoods.	The Park official of the community, his assistant and the committee of the village are the keys to success in management of natural resources, reduced land use conflict and development of sustainable livelihoods.	Enhance natural resource governance and management processes to build trust and reduce conflict. In the long-term, healthy partnerships among these hill tribe communities might lead to improved conservation outcomes through sustained support and compliance. Improved conservation outcomes require a broad array of management actions, national park officials, NGOs, and the Royal Project Foundation to be incorporated with community leaders and members.
	Royal Project Foundation (RPF) and non-government organisations (NGOs) such as SDF, CARE, IMPECT and FPP have provided substantial supports that enhance capacity building to these communities to develop their livelihood strategies while support for a variety of livelihood alternatives.	Uneven support by RPF. Those communities are more popular with tourists and with better infrastructure tend to obtain more support from external organisations. However, the other NGOs (SDF, CARE, IMPECT and FPP) are also significant organisations that enhance community-based conservation initiatives among these six participating communities.	Improve the existing community-based conservation initiatives by the establishment of partnership with local organisations and local hill tribe communities to enhance socio-economic development processes and outcomes. Further evenness of support from external organisations across all communities, particularly in the Ob Luang National Park.
Social capital	A strong sense of human-nature interactions embedded in each Pga k'nyau and Hmong community as the significant part of their distinct culture, belief and political contexts. They have developed their own social networks with external organisations in order to enhance their social resilience.	Despite the Royal Project Foundations (RPF), NGOs and local institutions support for the community-based conservation and livelihood development projects, these communities are still struggling with poverty, socio-economic development pressure, and conflicts over land and natural resource use, and unsustainable	DSLF could be applied as a holistic approach and analytical tool for livelihood analysis to improve the current national park management. The use of DSLF also enable national park officials to identify the causes and effects of environmental and socio-economic problems with the understanding of livelihoods contexts,

		management because of mismatched priorities and mismanagement of conservation initiatives.	traditional knowledge, needs, and potential livelihood strategies among hill tribe communities. This develops suitable strategies to improve their livelihoods, moving towards long-term sustainable development.
Financial capital	All communities have strengthened their financial capital positions through cash cropping since 1986 but are still relatively poor. Four communities have developed community-based ecotourism and some households have produced handicraft products for sale to tourists and external markets since 1997.	While all communities engage simultaneously in subsistence and cash economies, the development emphasis is currently on the cash economy, thereby potentially lowering resilience in cases of shocks (e.g. financial or natural).	Emphasise building resilience by providing greater support for subsistence livelihoods and/or alternative economies.
	The demand for agricultural areas has increased with population growth and the needs of additional incomes for their family. However, community members argue that the expansion of agricultural land into the protected areas is prohibited. They have collaborated with the RFD to employ effective agricultural techniques to increase the production rate in the limit of agriculture land areas.	Due to limited land areas, communities need to develop more efficient and sustainable agricultural practices requiring more capital (e.g. machinery, fertilizer, water, and pesticides). However, this is unsustainable agricultural practice, which may lead to environmental degradation. The purchasing of excessive quantities of fertilizer or pesticide and over-use of water should be avoided.	Continue the RPF and local institute funding and support to the communities. All funds and supports for education and consultation should emphasise building resilience and target greater support for subsistence livelihoods and/or alternative economies.
	The RPF provides varied amounts of funding to all communities for improving their livelihood development and conservation projects.	Despite the RPF funding, some communities' initiatives are more developed and successful than others. Mismanagement of funds by some national park managers and/or local leaders impacts on this.	Initiate and support sustainable agricultural techniques with funding and equipment from the external organisations particularly the Royal Project Foundation.
	A percentage of profits from all cash-based activities in each community goes to a locked box (trust box) in each village. This is the community fund. The trust box is kept	Community funds have provided a financial and social safety net and contribute to resilience and self-sufficiency in times of need. However, there are concerns across all communities that	The process whereby funds are distributed from RPF to each community needs to be more equitable, transparent and carefully monitored.

	in the house of the village leader, or in some cases in the local trust bank in the village.	the leader misuses/misappropriates community funds, amongst other security issues.	
	Many families receive remittances from individuals working in urban centres.	Remittances contribute to the diversification of communities' income. However, community members are paid less than Thai citizens due to lack of education and discrimination.	Enhanced security, accountability, and transparency is needed in the management of community funds through a monitoring process and collaborative decision-making. Security systems should be improved. Allocate local government funds needed for improved access to education for community members to facilitate equal employment opportunities and pay in urban centres. Increase awareness and campaigns needed to reduce discrimination against the hill tribe communities.
Physical capital	The villages in Doi Inthanon and Doi Suthep-Pui National Park have well developed road systems, reliable electricity, and piped water supply. The two villages in Ob Luang National Park have poor road access and limited and unreliable electricity supply.	Poor quality infrastructure in two villages has constrained livelihood development opportunities. Local government corruption is reported to be the root cause of the problem. Where services have been established, they are poorly maintained particularly in the remote two villages in Ob Luang National Park.	Improve infrastructure, in particular for road access to hill tribe villages in Ob Luang national park. These services should be carefully monitored and evaluated by setting up a council/committee with trustworthy representatives should be recruited from community members. The transparency and accountability of the council/ committee are crucial for the management of infrastructure funding.
TRANSFORMING STRUCTURES AND PROCESSES			
Development of co-management	Participating communities are actively involved in co-management initiatives, namely, Joint Management of Protected Areas (JOMPA) and the Whakatane mechanism.	Despite two decades of effort towards developing co-management initiatives, these are only partially successful due to the frequent changes of the national park director, governments, cabinet reshuffle and their policy priorities	Current co-management initiatives require on-going evaluation and monitoring by a council constituted by broad membership including village leaders and other members of the community.

CURRENT LIVELIHOOD STRATEGIES AND OUTCOMES			
Sustainable agricultural practices	The RPF has introduced organic farming and cash crop cultivation to the six villages to eradicate poverty and environmental problems.	Overemphasis on cash cropping both organic and non-organic farming may temporarily address poverty but will not address resilience. Non-organic farming risks increased intensification and environmental degradation.	Any further support from RPF should be limited to sustainable agriculture and should be designed within current resource limitations.
Community-based ecotourism (CBE)	Two Pga k'nyau villages in Doi Inthanon National Park and two Hmong villages in Doi Suthep Pui National Park have developed CBE as an alternative source of income.	Some environmental and socio-cultural impacts such as pollution and misbehaviour of tourists have been negative. In Baan Hmong, Doi Pui village, there is no limit to the numbers of tourists visiting. This leads to air pollution with exhaust and road dust from traffic congestion especially during the high tourist season and water pollution from waste disposal in this village. There are also no restrictions on tourist's behaviour. There remains an inadequate level of training and information technology for developing CBE enterprises in the four communities of Doi Suthep Pui and Doi Inthanon National Park.	CBE management in each village within Doi Inthanon and Doi Suthep Pui National Park should employ a strict code of conduct to control tourist behaviours and limit the number of tourists in each season. For the businesses to be successful and self-sustaining, CBE development in the villages of Doi Suthep Pui and Doi Inthanon National Park requires ecotourism training and improved information technology to enhance management skills.
	In two villages within Ob Luang National Park, community members believed that the development of CBE could help them to obtain alternative income for their household and communities.	The two villages within Ob Luang National Park require the improvement of infrastructure (good condition of roads and electrical supplies) to facilitate development of their CBE. However, some villagers in these two villages expressed their concerns about potential negative impacts of unsustainable ecotourism management such as social changes and environmental degradation. They considered training in ecotourism management programs to	Improved infrastructure is needed for developing the future CBE enterprises in the communities residing in Ob Luang National Park. This also requires ecotourism training and improved information technology to enhance management skills.

		be necessary for CBE development.	
Community-based natural resource management (CBNRM)	With external assistance, all communities have developed their own CBNRM through their local conservation networks by integrating their ecological traditional knowledge into introduced conservation activities such as reforestation, firebreak establishment and forest fire monitoring, establishment of water catchment areas, and waste management. These activities continue to be supported by external organisations such as FORRU, RPF and national park officials.	Hill tribe communities have been developing their own forms of CBNRM *in situ* for many hundreds of years using traditional knowledge to adapt to natural resource availability and external socio-economic pressure. However, the establishment of national park management has increased pressure to collaborate in CBNRM with external organisations. Despite good intentions, successful adaptive co-management has remained elusive to date. For example, Baan Hmong Mae Sa Mai village have developed a long-term partnership with FORRU in order to improve their reforestation techniques since 1992. However, they still faced the limitation of land use, including the areas for their reforestation projects.	Enhance adaptive co-management for sustainable livelihoods and effective national park management. The existing CBNRM enhances local conservation networks as a significant aspect of adaptive co-management that derived from the learning-by-doing processes. This knowledge should be applied to future national park management to mitigate negative environmental impacts and livelihood challenges.

8.2 Key Findings

8.2.1 Community Vulnerability

One of the difficulties in managing the national parks in Thailand arises from the fact that the National Parks were established at different times with differing regulations in each park. Currently, Northern Thailand's national parks are also home to many Indigenous hill tribe communities. These communities have had many conflicts over land rights and access to customary natural resources in the past decades (see Table 8.1). In this study, the three selected national parks were established in different decades, namely, Doi Inthanon National Park (1972), Doi Suthep-Pui National Park (1981) and Ob Luang National Park (1991) and given the new rules imposed upon them, the Indigenous hill tribe people who relied upon the forests for sustenance had to find new ways to sustain themselves. Due to the imposed nature of the regulations, an attitude of conflict developed between the tribes and the authorities and these conflicts still exist over natural resources use (Tomforde, 2003).

Over time, co-management initiatives have led to a place where some conflicts between the Indigenous people and park officials, have been partially resolved. National park management practices should include local empowerment, but there was little consultation with the locals and hill tribe communities, particularly in the early stage of national park establishment. Ideally, empowering Indigenous communities should be based on co-management between local communities and the government, but such an approach with Thailand's hill tribes would be challenging for a highly centralised government system (see Table 9.1). Given the lack of trust between the government and the hill tribes, it is unlikely that the government will be willing to accept park planning and management based on local empowerment and co-management. There is potential for much more progress towards a shared management system that allows these people to participate in decision making which will have positive impacts on their sustainability and the health of the forests.

Institutional Shocks

The challenges of Northern Thailand's national park management are related to their geographical locations being home to many Indigenous hill tribe communities. When the

national parks were first established, changes to property right and changes to access to resources were imposed upon these communities without warning. Initially, there were attempts to relocate communities to new areas and this led to intense much conflict. Lessons can be learned about how change can be negotiated so that those who are affected are part of the solution rather than creating another set of problems. The way that hill tribes care for and view the land is communal by nature. Their community-based natural resources management is developed by incorporating their ecological knowledge being the way that they manage their water, land and forest resources from a cultural perspective. However, participating hill tribe communities are facing problems of uncertainty of land ownership because their community land areas now belong to the national parks.

The Indigenous hill tribes and the national park authorities hold differing views about the use of lands and sense of ownership. The way that each views sustainability is also different. Those who live in the forests need to use their resources sustainably for sustenance, whereas the authorities wish to prevent the deforestation that is occurring from logging (both illegal and allowed by authorities' permission such as community forestry (and perceive that the hill tribes are causing damage and placing the forest at risk). The community forest supports the sustainable use of forest among the participating communities through the development of community-based natural resources management. Prior to the establishment of the national parks, the Indigenous people only farmed the land for their own sustenance. As these people learned to live with restrictions from the imposed laws (e.g. National Park, Forest Reserved and Land Reform Act), they found they needed to intensify their agricultural practices to enable them to purchase products they no longer had access to (see Table 8.1). This had detrimental effects on the forest and was an unintended outcome for the hill tribe people as well as the national park officials.

One of the complexities that exist in Thailand is corruption due to lack of transparency and accountability, particularly regarding natural resources management and exploitation. In this context, this has turned into conflicts over the use of natural resources and the management of each national park. National park management has prioritised the promotion of mass tourism to boost economic growth. This is an aspect of capitalism with a tourism incentive. The increasing number of tourists are exceeding the carrying capacity of national parks and causing collective environmental problems (Cole, Epstein, & McGinnis, 2014; Gersani,

Brown, O'Brien, Maina, & Abramsky, 2001). The management of national parks incorporates a complex interplay between interdependency and the aspirations of government-controlled planning, the subsistence dependency of Indigenous communities and a fragile ecosystem (Berkes, 2009; Sims, 2010). No individual can effectively stop another from exploiting a resource unless there are specific laws or regulations addressing the exploitation. Consequently, the authorities have built regulations to control perceived exploitation by the Indigenous hill tribes when establishing national parks, but may not yet have had enough knowledge (or incentive) to stop the problem of logging. Based on the interviews, some politicians and/or policy-makers see their favourite projects going to a Park official regardless of the consequences (or lack of) from the hill tribe communities who are directly affected by the same projects. It would seem that the benefits from natural resource exploitation through the establishment of infrastructure or other development projects in national parks have a higher value than the sustainability or the acceptance or desirability of the projects by and for the hill tribe people.

The diverse nature of national park stakeholders has created challenges for policy-makers working for national park management and developing co-management initiatives. Northern Thailand's national parks have developed an extensive system of conservation management. Each group of stakeholders has a differing set of ideals as to what they perceive is important in each national park. Some of these ideals are mutually exclusive, and some are able to be co-managed in such a way that each stakeholder's ideals can be realised. This system is potentially viably co-management development and a mechanism for securing local and Indigenous community support and building stakeholder consensus for sustainable park management. However, the potential of this system is yet to be fully maximised. The transition from a top-down approach (via centralised administration) to participatory (bottom-up) approach (being more democratic and decentralised) remains a great challenge to national park management. This topic will be discussed again as a part of transformation of hill tribe people's livelihoods and national park management systems in section 8.2.3.

Trends

Hill tribe communities' livelihoods and their access to assets are affected by trends as well as shocks and seasonality. One of the resource trends relates to the loss of forest areas and

conflicts over the access to customary natural resources. For the trends that can be predicted, like seasonal gains and losses and the deforestation from planned projects, the hill tribe people could plan around these known factors, and therefore be more resilient. In this study, the rate of deforestation has changed over time and the hill tribe communities have established a reforestation and firebreak system, which is supported by national park officials, local institutions and non-government organisations.

Deforestation has been the main cause of forest fires, soil erosion, wildlife habitat fragmentation and climate change, and these have increased livelihood vulnerabilities. Potential causes of deforestation have been identified among the interviewees as follows: 1) the rapid development of infrastructure, established in response to tourism demands; 2) the expansion of agricultural areas due to population increases; and 3) rapid population growth in general has led to the overexploitation and overuse of natural resources. To resolve the deforestation problems, significant conservation efforts are made in the areas of reforestation and forest fire management, established by these six participating communities through the development of co-management initiatives and community-based conservation activities. The reduction of slash-and-burn and shifting agricultural practices solves only part of the deforestation problem.

Additionally, many research participants believed that the other causes of deforestation include illegal logging, by the urban elites and other outsiders, and the rapid growth of infrastructure, roads and buildings, to serve tourists. Sustainable agriculture leading to food security and food safety relies on the interplay of key components of livelihood assets that allow the system to respond to evolving circumstances. The technological and social innovations embedded in sustainable agriculture development are recognized as complex processes that require knowledge domains from a variety of actors and a deep understanding of the contexts in which they are employed.

Seasonality

Participating hill tribe communities have faced seasonal changes, which impacted upon their food security. They face a high frequency volume of forest fires, soil erosion and floods that reduce and damage their agricultural products. Seasonal changes also cause fluctuations in the quality and quantity of communities' agricultural products. This increases uncertainty

and unreliability of household incomes. Fluctuations in market price of agricultural products have significant implications for livelihoods. The prices of agricultural products, dropped by oversupply and market price competition, have strongly affected some community members when they employed only mono cropping agricultural practice.

8.2.2 Livelihood Assets

Natural Capital

On-going deforestation is caused by mismanagement of land use through overemphasising on development of infrastructure for mass tourism purposes to boost economic growth. This is in contrast to and against the conservation goals of national park management. Community members believed that corruption is an influential cause of the deforestation problem. In their view, the way to stop or reduce further deforestation will require some mechanisms to promote and enhance good governance of national park management.

To avoid future deforestation, projects for reforestation and sustainable agriculture need consistent support through collaborative natural resource management between national park stakeholders and hill tribe communities. Villagers are willing to participate in reforestation, firebreak establishment, garbage management and recycling. These six hill tribe communities have reduced, and some have already abandoned, the tradition of slash-and-burn and shifting cultivation because of national park regulations and land use restrictions.

Currently, agricultural land areas in these six hill tribe communities are managed effectively by using mixed-crop cultivation through consistent support from the Royal Project Foundation (RPF) with seeds, organic fertiliser, and agricultural equipment. This support by the RPF enables the villagers to practice sustainable agricultural farming such as, organic farming, kitchen gardens and permaculture cultivation. Consequently, community members receive more income from the surplus of their agricultural products sold at the hill tribe and local markets. Some of these agricultural products are also bought by the RPF to sell in the RPF's own retail shops located in many of the provinces in Thailand. With on-going support from the RPF, these communities have carried on with these agricultural techniques to produce enough agricultural products for their own household consumption and commercial purposes.

The Pga k'nyau and the Hmong people are viewed differently due to the perceived differences in their agricultural practices. The Pga k'nyau have been viewed as forest guardians because they use and conserve their natural resources effectively. In contrast, the Hmong people have been criticised as forest destroyers because of their traditional slash-and-burn and shifting cultivation methods.

The Pga k'nyau people's traditional upland terraced rice cultivation is viewed as an environmentally friendly agricultural technique that enriches nutritients and conserves biodiversity in the soil as well as protects soil erosion. The development of agricultural practices is a significant part of the utilisation of Pga k'nyau and Hmong ecological knowledge, whilst also protecting their natural capital.

Human Capital

In each Pga k'nyau and Hmong village, the park official of the community, his assistant and committee are the key players representing the villagers and hold responsibility for community resource management. Their liaison duty is to negotiate with government officials relating to national park policies and regulations. They also facilitate collaborative working with external organisations such as tourism operators, academic institutions and non-government organisations (NGOs) in order to improve their communities' livelihood and socio-economic well-being. If they find any conflicts over natural resources have occurred with their village, they have to set up the community meeting to seek better strategies to resolve those conflicts. During community meetings, Park official of the village and committee inform the community members of all livelihood development projects and conservation initiatives. Enhancements in natural resource governance and management processes to build trust and reduce conflict in ensuring healthy long-term partnerships with these hill tribe communities might lead to improved conservation outcomes through sustained support and compliance. Improvement of conservation outcomes require a broad array of management actions, national park officials, NGOs, the Royal Project Foundation incorporate with community leaders and members.

The Royal Project Foundation (RPF) is an active organisation that has supported the livelihoods of hill tribe communities through education (nursery and primary school) and sustainable agricultural practices (training and techniques) since Northern Thailand's national

parks were established in the late 1960s. The RPF has also introduced, developed and supported the resident hill tribe communities with sustainable agricultural practices such as, organic farming. The most well known agricultural product grown in Baan Mae Klang Luang (Pga k'nyau) village is coffee, and Baan Hmong Doi Pui village grows tea. The participating Pga k'nyau villages also employ terraced rice cultivation, which is well-known. The RPF also supports hill tribe traditional products (handicrafts and clothes), and provides various training programmes related to agricultural techniques and alternative livelihood activities such as, plant nursery practice, community-based ecotourism management and elementary education.

Social Capital

A strong sense of human-nature interactions is embedded in each Pga k'nyau and Hmong community as a significant part of their distinct culture, belief and political contexts. They developed their own social networks with external organisations in order to enhance their social resilience. In this study, all participating communities are actively participating in many conservation and livelihood development projects supported by government departments, non-government organisations and the Royal Project Foundation. These projects are conservative initiatives that include the development of community-based natural resource management (CBNRM) and co-management initiatives among participating communities. As part of their social capital, the communities expressed their interest and investigated how the CBNRM and co-management initiatives could become a vital part of their livelihood development. Despite contribution from various government organisations, Royal Project Foundations, NGOs and local institutions that have supported the communities through conservation and livelihood development projects, these communities are still struggling with poverty, social changes, conflicts over land and natural resource use, and unsustainable management because of mismatch of priorities and mismanagement of conservation initiatives. A holistic approach to livelihood analysis is needed to identify problems in each hill tribe community in order to improve their livelihood strategies and their environmental management practices.

Financial Capital

Financial Capital of the hill tribe communities is mainly based on and developed through their commercial agricultural products. Many community members reported that the contributors to the diversification of incomes came from agriculture, ecotourism and remittance from villagers who work outside the community. However, they explained that they get paid less than Thai citizens due to lack of education and discrimination. Due to limited land areas, communities need to develop more efficient and sustainable agricultural practices requiring more capital (e.g. machinery, fertilizer, water, and pesticides). Despite evenness in funding and support from the RPF to all communities, some communities' initiatives are more developed and therefore more successful than others are. In this study, in two Pga k'nyau and two Hmong villages, the villagers have developed initiatives in response to tourism. They develop their own community-based ecotourism (CBE) as their alternative income. Some households also produced handicraft products for selling to visitors and tourists. The hill tribe communities have their own community funds to provide a financial and social safety net and contribute to resilience and self-sufficiency in times of shock. However, mismanagement of funds by local leaders has been reported as the cause of community fund insecurity.

Physical Capital

Over the past two decades, infrastructure such as roads, electricity and building were rapidly set up to serve mass tourism in the national parks. However, the rapid establishment with unsustainable management and maintenance causes environmental pollution and increases livelihood vulnerability. The participating villages do not have well-constructed roads. In the rainy season, the villagers still have difficulty in traveling to the city centre and in delivering of their agricultural products to the market. The development of CBE in the two participating villages residing in Ob Luang National Park is also stilted. There are needs to be improvements in infrastructure, particularly providing all season road access and electricity to hill tribe villages in each national park. However, these improvements require greater transparency for the efficient management of infrastructure funds.

8.2.3 Transforming Processes and Structures

Over the past decade, the Thai government has attempted to reform the institutions involved in natural resource management through the process of decentralisation, which has been proven crucial for the ongoing process of democratisation (Parr, Jitvijak, Saranet, & Buathong, 2008). The empowerment and participation of Indigenous communities in natural resources management decisions will also help to ensure a balance between livelihood and management goals. Facilitating effective community participation requires decentralisation and empowerment to enhance a greater community engagement in natural resources management. However, decentralisation has been criticised as reducing the responsibility of the state, potentially leading to local or Indigenous communities having less financial support for co-management initiatives, less policy and legislative support and, possibly, less international support (Berkes, 2009; Castro & Nielsen, 2001; Erdmann *et al.*, 2004). The enhancement of existing co-management initiatives is of prime importance in the sustainable development of national parks. This research found that co-management development is a significant step for national park management to help local and Indigenous communities in negotiation with authorities to improve their livelihoods and develop their natural resource management practices.

However, the management of Northern Thailand's national parks held the complex dilemma of reconciling conservation efforts with the development of hill tribe people's livelihoods. In a centralized governmental system, such as in Thailand, national park management still uses the top-down management approach. Over the past two decades, the process of initiating the joint management of protected areas (JOMPA) has developed through support from the Danish Cooperation for Environment and Development (DANCE). This has been followed by the adoption of a co-management mechanism called the "Whatakane mechanism" introduced by the Forest Peoples Programme in the U.K. (FPP) to improve the existing participatory management employed in many Northern Thailand and other Thailand national parks. Participating communities are actively involved in co-management initiatives such as, JOMPA and the Whakatane Mechanism. The two Hmong villages in Doi Suthep Pui National Park have participated JOMPA since 1981. One Hmong and one Pga k'nyau village in Ob Luang National Park have participated in JOMPA since 2004 and then joined in with

the Whakatane Mechanism in 2012. The two Pga k'nyau communities in Doi Inthanon National Park joined JOMPA in 2012.

8.2.4 Current Livelihood Strategies and Outcomes

The results show that the participating Pga k'nyau and Hmong villages have engaged in a range of livelihood strategies to cope with the varied constraints of land use restrictions, socio-economic development pressures, and environmental impacts. The villages also developed their livelihood strategies to seek opportunities and get involved with development projects from local institutions, the Royal Project Foundation, NGOs, tourism agencies, and academics.

The six communities that participated in this study are all involved in conservation activities, such as reforestation and forest fire protection. Four of the six communities have also developed their own community-based ecotourism (CBE) and all six practice community-based natural resource management (CBNRM) as significant livelihood strategies. All six communities believed that the development of CBE is important for sustaining their livelihoods and, hence, enabling them to increase their household incomes while protecting their environment. However, two of the communities (Bann Pa Kluay and Baan Huay Ka Noon villages within Ob Luang National Park) are relatively poor and face difficulties associated with poor infrastructure and accessing resources. These two communities explained their needs for infrastructure improvement to enable them to develop their own CBE. All six communities believed that the development of CBE is important for their livelihoods as it enables them to increase their household incomes while protecting the environment.

Based on the interview data, the main causes of deforestation and forest fires are traditional slash-and-burn cultivation and the expansion of agricultural areas by Indigenous hill tribe communities within the national parks. These problems are a long-term challenge for national park management. Over the past decades, these communities have adapted their traditional slash-and-burn cultivation to permanent fields of cash crop cultivation. However, this generates water pollution because of the overuse of fertiliser and the intensification of land use. To address this problem, the Royal Project Foundation introduced sustainable agricultural practices, such as organic farming and permaculture, to many Indigenous hill

tribe communities. These sustainable agricultural practices also serve as the means to protect the forest and help to minimise the size of agricultural areas in accordance with national regulations that prohibit the expansion of agricultural areas into protected forest areas.

Currently, all participating communities employ organic farming and permaculture as part of their agricultural practices. This study found that the Royal Project Foundation is an active organisation that supports these communities to develop alternative livelihoods that enable and enhance their socio-economic well-being. At the time of this study, Baan Mae Klang Luang village had its own organic coffee plantation, while Baan Hmong Doi Pui village had its own organic tea plantation. Both coffee and tea plantations are considered appropriate agricultural practices for upland cultivation because of the suitable climate and altitude, and both serve as sources of additional household income.

8.3 Contributions of the Study

This study has applied DFID's sustainable livelihood framework to investigate current Indigenous communities' livelihood strategies and natural resource management practices. Since the establishment of Northern Thailand's national parks, these communities have had to deal with all the constraints and threats associated with national park regulations and external socio-economic development pressures. These communities have gradually adapted their traditional livelihood strategies to engage in sustainable agricultural practices, community-based ecotourism (CBE), and community-based natural resource management (CBNRM). In doing so they have shifted from forest-dependent subsistence livelihoods towards participating in a capitalist economy with a growing reliance on CBE. This study highlights the complexities of the livelihood strategies and environmental management practices of these communities.

Another contribution of this study is the confirmation of the usefulness of DSLF in understanding the complex interactions among various national park stakeholders and Indigenous communities. This framework provided a powerful tool to investigate livelihood strategies and environmental management practices by using its guidelines to outline the interview questions. This study also employed Participatory Rural Appraisal (PRA) methods to gather useful information in each community. The core methods used were interviews,

observations, and document analysis based on secondary resource such as government documents, non-governmental organisation (NGOs) reports and academic literature. Interviews were conducted with villagers, national parks officials, academics, and representatives from non-government organisations and tourism agencies. In each community, the DSLF and its guideline were used to analyse livelihood capitals and local understandings of socio-ecological sustainability. The interview data was also analysed to investigate how co-management initiatives supporting by national parks officials and external organisations enable Pga k'nyau and Hmong communities to develop their own community-based ecotourism (CBE) and community-based natural resource management (CBNRM).

The existing literature focuses almost exclusively on the impacts of tourism development in national parks. To date, there has been little research into the links between livelihood strategies and environmental management practices incorporating the aspects of economic, social, and political changes in Northern Thailand's national parks. Thus, this study contributes empirical knowledge to fill a gap in the literature and provides recommendations for CBE, CBNRM, and co-management initiatives in the region.

8.4 Recommendations and Suggestions for Future Research

This study explores the livelihood strategies and environmental management practices of the six Indigenous hill tribe communities in Northern Thailand's national parks. Many issues are identified in this study, and this section provides recommendations and suggestions for future research.

8.4.1 Recommendations for Community-Based Ecotourism

In this study, two Pga k'nyau villages in Doi Inthanon National Park and two Hmong villages in Doi Suthep-Pui National Park have developed community-based ecotourism (CBE) as an alternative livelihood strategy that can generate income to support their households and communities. The community members from the other villages (one Pga k'nyau and one Hmong village) in Ob Luang National Park expressed their need for an improvement to infrastructure, particularly the road systems and electricity supply. They believed that an improvement in infrastructure would help them to develop CBE in the future as well as facilitating improved transportation of their agricultural products during the rainy season.

Community members in the four villages that currently engage in CBE suggest that CBE development in their villages could be further improved in four ways. Firstly, enhanced participation and empowerment with support from national park authorities, external organisations and local institutions. Secondly, promoted community-based conservation with collaborative social responsibilities refers to incentives among community members through development of co-management. Thirdly, strengthen the social capital in relation to community networks, national park officials, NGOs, academics and travel agencies. This also relates to the development of community leadership and tourism service skills. Community members explained that they have developed their CBE through the process of learning by doing. Finally, the development of CBE also supports community funding for conservation initiatives.

Based on the interviews and observations with national park officials, NGOs, tourism agencies, and academics, the factors perceived as important to the success of CBE in national parks are self-regulatory, partnerships through co-management development, building of local awareness in conservation, and local skills development in ecotourism management and services. In summary, the results suggested five strategies that could support CBE in each hill tribe community. Firstly, enhancing the existing CBE networks amongst hill tribe communities and local organisations is a vital part of co-management initiative development. Secondly, there is a need for participatory assessment of tourism impacts and establishing collaborative conservation initiatives among national park stakeholders, officials and communities by using tourism revenues. Thirdly, enhanced socio-economic well-being by supporting equal benefit sharing of national park tourism income with hill tribe communities as well as building up local capacity of education and conservation needed skill in CBE businesses. Fourthly, fostering low impact tourism (e.g. ecotourism), promoting CBE in each hill tribe community while improving their infrastructure, and using clean energy such as solar cell and wind power. Lastly, developing and applying ecotourism and CBE codes of conduct for tourists and tour operators, and instigating ecotourism and CBE training programmes in all national parks.

8.4.2 Recommendations for Co-management and Community-Based Conservation

The development of co-management initiatives and collaborative policy-making can empower local and Indigenous hill tribe communities to participate in conservation activities. Consequently, the participation of these communities in co-management has the potential to promote adaptive co-management and enable them to learn from their previous experience of existing co-management. The Indigenous hill tribe communities within Northern Thailand's national parks have participated in and developed their own community-based conservation of the surrounding protected forest areas.

CBNRM is recognised as a conservation approach that enables communities to manage their conservation activities, such as reforestation, the establishment of water catchment areas, and forest fire protection and firebreak management. The CBNRM of these communities also includes the protection of sacred forest areas. This study found that the six selected Indigenous hill tribe communities have developed their own natural management practices. Their motivation and natural management practices differ based on the cultural and traditions of each community. In the three of the selected national parks studied, the co-management initiatives have gradually been developed through the involvement of Indigenous hill tribe communities through the participation in co-management initiatives, namely, JOMPA and Whakatane Mechanism, that enhances the collaboration of national park officials and Indigenous communities in collaborative policy-making processes in environmental management.

To maximise the success of co-management, national park officials should work more closely with the hill tribe communities to develop mutual understanding and equitable benefit sharing. Several community members suggested that local empowerment and full participation are important for co-management in order to enable hill tribe communities to integrate different traditions into new management schemes. As the present results indicate, the adaptation of the Indigenous hill tribes' livelihoods and their conservation strategies will be vital to planning within the new national park restrictions. Furthermore, empowering the hill tribe communities with support from national park officials, NGOs and academics will enable them to establish their own community-based ecotourism and engage in their own

community-based natural resource management, as a vital part of collaborative natural resource management.

As a result, the development of adaptive co-management based on the improvement of existing co-management initiatives and lessons learnt from community-based conservation practices is needed. Collaborative natural resource management should ensure that the empowerment process provides equal opportunities to participate in collaborative policy-making and natural resource management practices. Furthermore, the capability and willingness of the Indigenous people to adapt to new conditions and requirements, as illustrated by the Pga k'nyau and Hmong communities studied, should be fully understood.

In this study, the joint management of protected areas (JOMPA) and Whatakane Mechanism have been incorporated into the current conservation policy of national parks in order to enhance the collaboration between National Park stakeholders and Indigenous hill tribe communities. The development of co-management initiatives can support the CBNRM activities of the six communities. This study, the Ob Luang National Park is currently applying a new approach in co-management initiatives called the 'Whakatane Mechanism' in order to enhance the participation of Indigenous people in the policy-making process in a way that will improve the management of national parks. This mechanism has promoted conservation as well as readdressed historical and current conflicts to seek an appropriated solution which secure the communities' right to their lands and territories. The development of community mapping, particularly for the overlapping areas between protected forest, agricultural and residential areas in many hill tribe communities, has markedly improved understanding of boundary locations.

However, the existing co-management initiatives require ongoing development in the long-term and should be considered for other national parks. In this study, livelihood strategies include natural resource management practices and the use of Indigenous environmental knowledge. The empowerment of the communities in this study to participate in conservation initiatives at community level is crucial in national park management. The development of co-management initiatives is a vital part of the decentralisation approach to enhance the role of local and Indigenous people in natural resource management policy-

making. Thus, the challenge for current and future national park management is how to develop effective co-management initiatives in the long-term.

Since JOMPA and Whakatane Mechanism have been implemented, the three selected national parks, the park authorities, local institutions, and indigenous hill tribe communities, including NGOs have been working together to develop and put forward adaptive co-management practices for improving national park management systems. These mechanisms have remedied some of the tensions between national park authorities and communities, and increased protection of forests and watersheds. Moreover, the livelihoods of Indigenous hill tribe people residing in Northern Thailand's national parks, including food security and socio-economic well-being can be improved. Therefore, existing co-management needs to be shifted towards to greater adaptive co-management in the near future through these following recommendations:

- Continue to strengthen the joint management approach and roles of indigenous communities in overall management of national parks.
- Address how the park management can contribute to enhance local people participation in adaptive co-management initiatives.
- Use both JOMPA and Whakatane mechanism for other national parks in the country, especially where top-down exclusionary conservation approaches prevail.
- Reform national conservation policies and related legislation by learning from previous experiences in national park management to fully support a greater adaptive co-management approach.

8.4.3 Suggestions for Future Research

- Future research should continue to explore how to develop the existing co-management initiatives (JOMPA and the Whakatane mechanism) into the future management of national parks, along with the development of sustainable livelihoods of the Indigenous residents.
- Future research should consider investigating the other Indigenous communities residing within, and adjacent to, Northern Thailand's national parks, such as, the Akha and Lua, to obtain useful information to develop co-management initiatives into any future management practices.

- Future research should provide a greater focus on how to develop long-term co-management initiatives and good governance of collaborative natural resource management, whilst encouraging local and Indigenous communities to develop and engage in their own ecotourism ventures and further improve Thai conservation and sustainable development policies in the other national parks in Thailand.
- Based on this study, future research should be conducted in other terrestrial (forested mountainous) national parks in Northern Thailand as the DSLF can also be applied to other types of national park, such as, marine national parks, in order to improve other Indigenous communities' livelihoods.

8.5 Conclusion

The insights gained from this study allow several conclusions to be drawn. Firstly, whilst co-management initiatives have been developed in Northern Thailand's national parks since the late 1990s, there is a need to improve the effectiveness of co-management. Important lessons can be learnt from previous co-management initiatives to develop adaptive co-management in the national parks, with a focus on local participation and empowerment, and the long-term sustainable development of national park management and communities' livelihoods. Consequently, understanding the diversity of Indigenous hill tribe communities' livelihood strategies and their natural resource management practices, including their ecological knowledge is necessary to improve future national park management. Thus, these are the prerequisites for the development of co-management initiatives in national park management. This study recommends that the co-management initiatives of national parks should be developed through collaborative policy-making among national park stakeholders and Indigenous hill tribe communities regularly meeting to create mutual understanding and fairly share benefits. This may be a possible way to improve the existing co-management initiatives and conservation strategies within the study sites. In this study, the joint management of protected areas (JOMPA) has led to positive outcomes in the efficiency of national park management while developing sustainable livelihood strategies. In this study, the Ob Luang National Park is currently applying a new approach in co-management initiatives, called the "Whatakane Mechanism", in order to enhance the participation of

Indigenous people in the policy-making process and conservation activities to improve their livelihoods and develop sustainable natural resource management practices.

Secondly, sustainable agricultural practices such as organic farming and permaculture have been are essential to the environmental protection and sustainable livelihoods in this study. Agricultural products are the primary source of household incomes in these communities. However, the intensification of cash-crop cultivation leads to negative impact on environment such water pollution and soil contamination. In some households, villagers have made their traditional clothes and handicrafts to sell to visitors and tourist. The production of traditional clothes and handicrafts also provide supplementary household incomes for these communities.

Thirdly, community-based ecotourism (CBE) has been seen as an essential conservation strategy for conserving biodiversity and enhancing socio-economic well-being among the engaged communities in this study. The development of sustainable CBE resulted in the achievement of poverty reduction while improving the living standards of the hill tribe communities. The enhancement of community empowerment to develop their own CBE necessitates the full participation of community members in environmental management through ecotourism activities as well as reconciling the needs of conservation and sustainable livelihood development. The development of CBE also provides greater benefit in terms of education, and management and language skills, especially in English. This provides significant opportunities for building social and economic resilience to deal with external socio-economic development pressures.

Finally, the equitable distribution of benefits and collaborative decision-making processes in community-based conservation (CBE and CBNRM) is important to the Indigenous communities' livelihoods. To benefit from their involvement, both CBE and CBNRM must be structured in a way that is culturally appropriate. For example, these communities should have secure land rights and power to make land use decisions within their communities' boundaries. Thus, the development of CBE and CBNRM has to pay attention to mutual benefits, participation, and local empowerment through the implementation of participatory conservation approaches.

Overall, the six hill tribe communities in this study have continued to participate in conservation activities. They also employ sustainable agricultural practices incorporating their traditional knowledge to protect their environment as part of their community-based natural resource management. The sustainable management of agricultural practices and community-based conservation initiatives among these hill tribe communities is necessary to protect natural resources, which is a significant aspect of the conservation goals of national park management. Understanding the diversity of livelihood strategies and community-based environmental management practices have become important in enhancing the effectiveness of current and future national park management in order to develop adaptive co-management in Northern Thailand's national parks.

The development of sustainable agricultural practices, CBE, CBNRM, and co-management initiatives can contribute to the improvement of Indigenous communities' livelihoods and their standards of living. However, this depends on how effectively communities can participate in collaborative natural resource management. Collaborative management between policy-makers and Indigenous hill tribe communities is essential to deal with the challenges identified in this study, particularly critical issues such as, land use restrictions, property rights, access to resources and opportunities to participate in collaborative decision-making processes. These Indigenous communities need to develop their own CBE and CBNRM in ways compatible with their culture and lifestyles whilst conserving their cultural and natural resources. It is therefore important to address the problems of the development of agricultural practices, CBE, CBNRM, and co-management initiatives in the past to improve current and future national park management. The existing co-management initiatives require a collaborative working and learning between national park stakeholders and Indigenous hill tribe communities for greater consistentcy, transparency and collaboration policy-making and implementation. Enhancing community empowerment and participation in collaborative conservation activities and policy-making is still needed in order to effectively develop adaptive co-management within the national parks in Northern Thailand.

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Appendix 1: Ethics Approval

MASSEY UNIVERSITY
TE KUNENGA KI PŪREHUROA

26 October 2011

Aurathai Phongchiewboon
[redacted]

Dear Aurathai

Re: HEC: Southern B Application – 11/62
Socio-ecological relationships and livelihood strategies in Northern Thailand's National Park Communities

Thank you for your letter dated 25 October 2011.

On behalf of the Massey University Human Ethics Committee: Southern B I am pleased to advise you that the ethics of your application are now approved. Approval is for three years. If this project has not been completed within three years from the date of this letter, reapproval must be requested.

Please note that travel undertaken by students must be approved by the supervisor and the relevant Pro Vice-Chancellor and be in accordance with the Policy and Procedures for Course-Related Student Travel Overseas. In addition, the supervisor must advise the University's Insurance Officer.

If the nature, content, location, procedures or personnel of your approved application change, please advise the Secretary of the Committee.

Yours sincerely

Dr Nathan Matthews, Acting Chair
Massey University Human Ethics Committee: Southern B

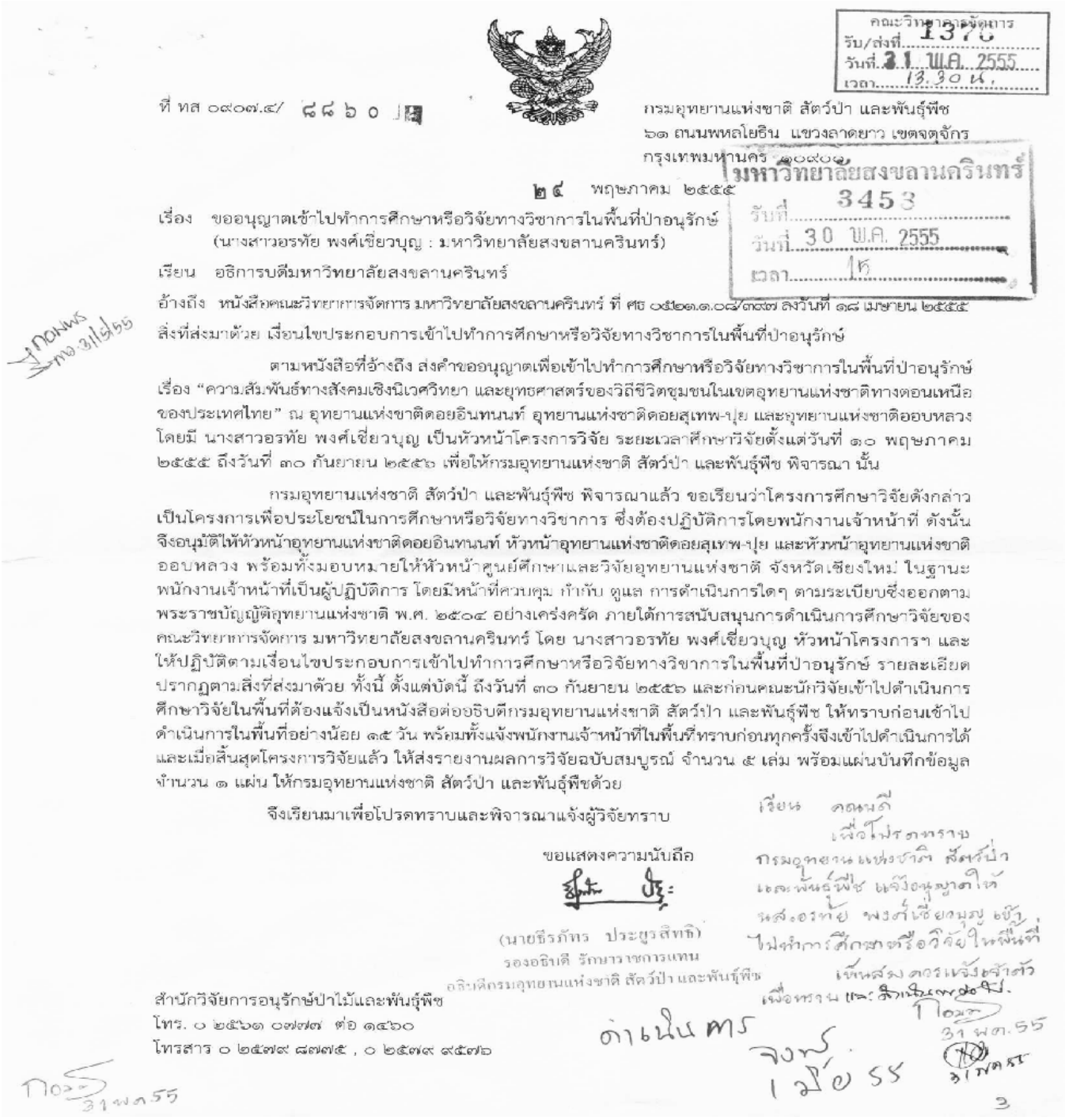
cc A/Prof John Holland
INR
PN433

Dr Trisia Farrelly
School of People, Environment & Planning
PN331

Prof Peter Kemp, HoI
INR
PN433

Mrs Mary Roberts, HoS Secretary
School of People, Environment & Planning
PN331

Appendix 2: Letter of Permission from the Department of National Parks, Wildlife and Plants Conservation



คณะวิทยาการจัดการ
รับ/ส่งที่ 1376
วันที่ 31 พ.ค. 2555
เวลา 13.30 น.

ที่ ทส ๐๙๐๗.๔/ ๘๘๖๐

กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช
๖๑ ถนนพหลโยธิน แขวงลาดยาว เขตจตุจักร
กรุงเทพมหานคร ๑๐๙๐๐

มหาวิทยาลัยสงขลานครินทร์
วันที่ 3453
วันที่ 30 พ.ค. 2555
เวลา 16

๒๔ พฤษภาคม ๒๕๕๕

เรื่อง ขออนุญาตเข้าไปทำการศึกษาหรือวิจัยทางวิชาการในพื้นที่ป่าอนุรักษ์
(นางสาวอรทัย พงศ์เชี่ยวบุญ : ม.หาวิทยาลัยสงขลานครินทร์)

เรียน อธิการบดีมหาวิทยาลัยสงขลานครินทร์

อ้างถึง หนังสือคณะวิทยาการจัดการ มหาวิทยาลัยสงขลานครินทร์ ที่ ศธ ๐๕๒๑๑.๑.๐๘/๓๗๗ ลงวันที่ ๑๘ เมษายน ๒๕๕๕

สิ่งที่ส่งมาด้วย เงื่อนไขประกอบการเข้าไปทำการศึกษาหรือวิจัยทางวิชาการในพื้นที่ป่าอนุรักษ์

ตามหนังสือที่อ้างถึง ส่งคำขออนุญาตเพื่อเข้าไปทำการศึกษาหรือวิจัยทางวิชาการในพื้นที่ป่าอนุรักษ์ เรื่อง "ความสัมพันธ์ทางสังคมเชิงนิเวศวิทยา และยุทธศาสตร์ของวิถีชีวิตชุมชนในเขตอุทยานแห่งชาติทางตอนเหนือของประเทศไทย" ณ อุทยานแห่งชาติดอยอินทนนท์ อุทยานแห่งชาติดอยสุเทพ-ปุย และอุทยานแห่งชาติออบหลวง โดยมี นางสาวอรทัย พงศ์เชี่ยวบุญ เป็นหัวหน้าโครงการวิจัย ระยะเวลาศึกษาวิจัยตั้งแต่วันที่ ๑๐ พฤษภาคม ๒๕๕๕ ถึงวันที่ ๓๐ กันยายน ๒๕๕๖ เพื่อให้กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช พิจารณา นั้น

กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช พิจารณาแล้ว ขอเรียนว่าโครงการศึกษาวิจัยดังกล่าว เป็นโครงการเพื่อประโยชน์ในการศึกษาหรือวิจัยทางวิชาการ ซึ่งต้องปฏิบัติการโดยพนักงานเจ้าหน้าที่ ดังนั้น จึงอนุมัติให้หัวหน้าอุทยานแห่งชาติดอยอินทนนท์ หัวหน้าอุทยานแห่งชาติดอยสุเทพ-ปุย และหัวหน้าอุทยานแห่งชาติออบหลวง พร้อมทั้งมอบหมายให้หัวหน้าศูนย์ศึกษาและวิจัยอุทยานแห่งชาติ จังหวัดเชียงใหม่ ในฐานะพนักงานเจ้าหน้าที่เป็นผู้ปฏิบัติการ โดยมีหน้าที่ควบคุม กำกับ ดูแล การดำเนินการใดๆ ตามระเบียบซึ่งออกตามพระราชบัญญัติอุทยานแห่งชาติ พ.ศ. ๒๕๐๔ อย่างเคร่งครัด ภายใต้การสนับสนุนการดำเนินการศึกษาวิจัยของคณะวิทยาการจัดการ มหาวิทยาลัยสงขลานครินทร์ โดย นางสาวอรทัย พงศ์เชี่ยวบุญ หัวหน้าโครงการฯ และให้ปฏิบัติตามเงื่อนไขประกอบการเข้าไปทำการศึกษาหรือวิจัยทางวิชาการในพื้นที่ป่าอนุรักษ์ รายละเอียดปรากฏตามสิ่งที่ส่งมาด้วย ทั้งนี้ ตั้งแต่บัดนี้ ถึงวันที่ ๓๐ กันยายน ๒๕๕๖ และก่อนคณะนักวิจัยเข้าไปดำเนินการศึกษาวิจัยในพื้นที่ต้องแจ้งเป็นหนังสือต่ออธิบดีกรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช ให้ทราบก่อนเข้าไปดำเนินการในพื้นที่อย่างน้อย ๑๕ วัน พร้อมทั้งแจ้งพนักงานเจ้าหน้าที่ในพื้นที่ทราบก่อนทุกครั้งจึงเข้าไปดำเนินการได้ และเมื่อสิ้นสุดโครงการวิจัยแล้ว ให้ส่งรายงานผลการวิจัยฉบับสมบูรณ์ จำนวน ๕ เล่ม พร้อมแผ่นบันทึกข้อมูล จำนวน ๓ แผ่น ให้กรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืชด้วย

จึงเรียนมาเพื่อโปรดทราบและพิจารณาแจ้งผู้วิจัยทราบ

ขอแสดงความนับถือ

(นายธีรภัทร ประยูรสิทธิ)
รองอธิบดี รักษาราชการแทน
อธิบดีกรมอุทยานแห่งชาติ สัตว์ป่า และพันธุ์พืช

สำนักวิจัยการอนุรักษ์ป่าไม้และพันธุ์พืช
โทร. ๐ ๒๕๖๑ ๐๗๗๗ ต่อ ๑๔๖๐
โทรสาร ๐ ๒๕๗๙ ๘๗๗๕ , ๐ ๒๕๗๙ ๙๕๗๖

เรียน คณบดี
เพื่อโปรดทราบ
กรมอุทยานแห่งชาติ สัตว์ป่า
และพันธุ์พืช แจ้งอนุมัติให้
นส.อรทัย พงศ์เชี่ยวบุญ เข้า
ไปทำการศึกษาหรือวิจัยในพื้นที่
เห็นสมควรแจ้งเจ้าตัว
เพื่อทราบ และดำเนินการต่อไป

Appendix 3: Information Sheets

3.1. Government Sector Representatives

Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities

INFORMATION SHEET

(Government sector representatives)

Researcher Introduction

My name is Aurathai Phongchiewboon. I am currently studying for Doctoral degree in Environmental Management. This research project is being conducted in partial fulfilment of the requirements for the degree of Doctoral of Philosophy in Environmental Management at Massey University, Palmerston North, New Zealand. My research project is entitled: *Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities*. This research has conducted under the supervision of Associate Professor John Holland and Dr. Trisia Farrelly.

Project Description

This study will be conducted in national parks, namely, Doi Suthep-Pui, Doi Inthanon, and Ob Luang National Parks during February to August 2012. This thesis aims to assess the socio-ecological relationships in northern Thailand's national parks with respect to potential livelihood strategies. The researcher will investigate these relationships regarding communities' perception of sustainable livelihood and ways of dealing with environmental and social changes. The results of this study will contribute to better-informed decision-making and make a useful contribution to the literature and enhance co-management of conservation among national park stakeholders. The ultimate goal of this study is to provide the recommendation of potential livelihood strategies which are able to enhance socio-economic wellbeing while ensuring the ecological integrity of national parks ecosystems.

The Research Participants

This study will be carried out during February to August 2012 in Doi Suthep-Pui, Doi Inthanon and Ob Luang National Parks.

I would like to meet with representatives from government sectors, non-government organizations (NGOs), tourism business sectors and with people who live in the national parks in these communities. These communities are listed as following:

- Doi Inthanon National Park: Baan Mae Klang Luang and Baan Pa Hmoon,
- Doi Suthep-Pui National Park: Baan Mae Sa Mai and Baan Hmong Doi Pui
- Ob Luang National Park: Baan Huay Ka Noon and Baan Pa Kluay

Invitation to participate

As you are involved with work and/or policy-making in the national parks management and/or community development, I would like to invite you to participate in this study. With your permission, I would like to interview you about your involvement with environmental management and conservation initiative / programs in the national park. This would mean meeting with me once or twice between February and August 2012 for interviews so I can learn about your work experiences

of national park management and/or community development. The interviews will take place at a mutually convenient time and location. Each interview will take 45-60 minutes. I will sound recorded the interview for transcribed accurately later. The preliminary findings will be shared with you in summary report. The final findings will be written into a dissertation, published in articles, presented at conferences and may be used in future teaching activities.

Participants' rights

You are under no obligation to accept this invitation. If you agree to participate in this research, what you say is confidential and you also have the right to:

- decline to answer any particular question that might make you feel uncomfortable;
- withdraw from the study at any time without any negative consequences by advising the researcher;
- ask any question about the study at any time during participation;
- ask for the audio recorder to be turned off at anytime;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to summary of the project findings when the project is concluded.

Data Management

All information will be analysed by the researcher. The welfare of participants will always be of paramount importance when taking records and every effort will be taken to ensure confidentiality and anonymity is maintained. If you do not allow in using your name, I will use pseudonyms instead of your name in the reports of this study. Photo will only be used with your permission. Thus, all information you provide is considered completely confidential. The researcher is responsible for keeping all data. The data will be secured and kept confidential during the research period. All data will be securely kept in locked filing cabinets in my offices at Massey University, Palmerston North, in New Zealand and Chiang Mai for five years (only the researcher can access). The researcher will be responsible for data security and eventual disposal after this study is finished in five years time. The researcher's supervisors and the researcher will take the responsibility to confirm the disposal of all data

Project contacts

The participant is welcome to contact the researcher and/or supervisors if she/he has any question regarding the project.

Researcher: Aurathai Phongchiewboon

In New Zealand
Institute of Natural Resources
College of Science
Massey University
Palmerston North, New Zealand
Tel: + 64 6 3569099 ext. 2944
+ 64 6 21312252

In Thailand
257/71 Moo Baan Dao-Wa-Doung, Suthep Rd., Tambon Suthep, Amphur Muang, Chiang Mai, Thailand, 50200.
Tel: +66818836601
E-mail: aomaura@gmail.com

Research supervisors (in New Zealand)

Associate Professor John Holland
Institute of Natural Resources
College of Science
Massey University
Palmerston North, New Zealand
Tel: +64 6 3569099 ext.5565
E-mail: J.D.Holland@massey.ac.nz

Dr.Trisia Farrelly
School of People, Environment & Planning
Massey University
Palmerston North, New Zealand
Tel: +64 6 3569099 ext.3509
E-mail: T.Farrelly@massey.ac.nz

The research co-ordinator (in Thailand)

Dr. Wantanee Chawapong

Chiang Mai Public Health Office
10 Suthep Rd., Tambon Suthep,
Amphur Muang
Chiang Mai, Thailand
50200
Tel: +66 81-7659104
E-mail: wantanee314@hotmail.com

This project has been reviewed and approved by Massey University Human Ethics Committee: Southern B Application 11/62. If you have any concerns about the conduct of this research, please contact Dr.Nathan Matthews, Chairperson, and Massey University Human Ethics Committee: Southern B, telephone +64 6 350 5799 ext. 8729, Email: humanethicsouthb@massey.ac.nz.

Thank you for the opportunity to inform you about my research. If you are interested to participate in this research please contact to the researcher directly.

Kind regards, Aurathai Phongchiewboon (Researcher)

3.2 Non-Government Organisation Representatives

Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities

INFORMATION SHEET

(NON-GOVERNMENT ORGANIZATION REPRESENTATIVES)

Researcher Introduction

My name is Aurathai Phongchiewboon. I am currently studying for Doctoral degree in Environmental Management. This research project is being conducted in partial fulfilment of the requirements for the degree of Doctoral of Philosophy in Environmental Management at Massey University, Palmerston North, New Zealand. My research project is entitled: *Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities*. This research has conducted under the supervision of Associate Professor John Holland and Dr. Trisia Farrelly.

Project Description

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The Research Participants

This study will be carried out during February to August 2012 in Doi Suthep-Pui, Doi Inthanon and Ob Luang National Parks. I would like to meet with representatives from government sectors, non-government organizations (NGOs), tourism business sectors and with people who live in the national parks in these communities. These communities are listed as following;

- Doi Inthanon National Park: Baan Mae Klang Luang and Baan Pa Hmoon,
- Doi Suthep-Pui National Park: Baan Mae Sa Mai and Baan Hmong Doi Pui
- Ob Luang National Park: Baan Huay Ka Noon and Baan Pa Kluay

Invitation to participate

As your work relates to community development and national parks activities, I would like to invite you to participate in this study. With your permission, I would like to interview you about your work experience in national park with a specific focus on the participation of local communities in environmental management and conservation initiatives. I would like to meet you once or twice between December and May for interviews to learn from your experiences. The interviews will take place at a mutually convenient time and location. The interviews will take place at a mutually convenient time and location. Each interview will take 45-60 minutes. I will sound recorded the interview for transcribed accurately later. The preliminary findings will be shared with you in summary report. The final findings will be written into a dissertation, published in articles, presented at conferences and may be used in future teaching activities.

Participants' rights

You are under no obligation to accept this invitation. If you agree to participate in this research, what you say is confidential and you also have the right to:

- decline to answer any particular question that might make you feel uncomfortable;
- withdraw from the study at any time during participation;
- ask any question about the study at any time during participation;
- ask for the audio recorder to be turned off at anytime;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to summary of the project findings when it is concluded.

Data management

All information will be analysed by the researcher. The welfare of participants will always be of paramount importance when taking records and every effort will be taken to ensure confidentiality and anonymity is maintained. If you not allow using your name, I will use pseudonyms instead your name in the reports of this study. Photo will only be used with your permission. Thus, all information you provide is considered completely confidential. The researcher is responsible for keeping all data. The data will be secured and kept confidential during the research period. All data will be securely kept in locked filing cabinets in my offices at Massey University, Palmerston North, in New Zealand and Chiang Mai for five years (only the researcher can access). The researcher will be responsible for data security and eventual disposal after this study is finished in five years time. The researcher's supervisors and the researcher will take the responsibility to confirm the disposal of all data.

Project contacts

The participant is welcome to contact the researcher and/or supervisors if she/he has any question regarding the project. In addition, the participant also can contact the research co-ordinator in Thailand to ask any question about this research. All contact details are shown as follows;

The researcher: Aurathai Phongchiewboon

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Research supervisors (in New Zealand)

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Dr.Trisia Farrelly
School of People, Environment & Planning
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E-mail: T.Farrelly@massey.ac.nz

The research co-ordinator (in Thailand)

Dr. Wantanee Chawapong

Chiang Mai Public Health Office
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Amphur Muang
Chiang Mai, Thailand
50200
Tel: +66 81-7659104
E-mail: wantanee314@hotmail.com

This project has been reviewed and approved by Massey University Human Ethics Committee: Southern B Application 11/62. If you have any concerns about the conduct of this research, please contact Dr.Nathan Matthews, Chairperson, and Massey University Human Ethics Committee: Southern B, telephone +64 6 350 5799 ext. 8729
Email: humanethicsouthb@massey.ac.nz.

Thank you for the opportunity to inform you about my research. If you are interested to participate in this research please contact to the researcher directly.

Kind regards, Aurathai Phongchiewboon (Researcher)

3.3 Tourism Business Representatives

Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities

INFORMATION SHEET
(TOURISM BUSINESS REPRESENTATIVES)

Researcher Introduction

My name is Aurathai Phongchiewboon. I am currently studying for Doctoral degree in Environmental Management. This research project is being conducted in partial fulfilment of the requirements for the degree of Doctoral of Philosophy in Environmental Management at Massey University, Palmerston North, New Zealand. My research project is entitled: *Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities*. This research has conducted under the supervision of Associate Professor John Holland and Dr. Trisia Farrelly.

Project Description

This study will be conducted in national parks, namely, Doi Suthep-Pui, Doi Inthanon, and Ob Luang National Parks during February to August 2012. This thesis aims to assess the socio-ecological relationships in northern Thailand's national parks with respect to potential livelihood strategies. The researcher will investigate these relationships regarding communities' perception of sustainable livelihood and ways of dealing with environmental and social changes. The results of this study will contribute to better-informed decision-making and make a useful contribution to the literature and enhance co-management of conservation among national park stakeholders. The ultimate goal of this study is to provide the recommendation of potential livelihood strategies which are able to enhance socio-economic wellbeing while ensuring the ecological integrity of national parks ecosystems.

The Research Participants

This study will be carried out during February to August 2012 in Doi Suthep-Pui, Doi Inthanon and Ob Luang National Parks. I would like to meet with representatives from government sectors, non-government organizations (NGOs), tourism business sectors and with people who live in the national parks in these communities. These communities are listed as following;

- Doi Inthanon National Park: Baan Mae Klang Luang and Baan Pa Hmoon,
- Doi Suthep-Pui National Park: Baan Mae Sa Mai and Baan Hmong Doi Pui
- Ob Luang National Park: Baan Huay Ka Noon and Baan Pa Kluay

Selection Criteria of Potential Participants

The criteria for tourism sectors participants are 1.) The tourism businesses (agency) representatives have been operating the business for more than 5 years and the tour program relates to the communities at least two in the three national parks, and 2.) The local tourist guides who have more than 5 years experience in relation to this tour program. If you met one of these criteria, I would like to invite you to participate in this research.

Invitation to participate

As you are one of the key stakeholders involved in community-based ecotourism within these three national parks, I would like to invite you to participate in this study. Participation in this study is voluntary. With your permission, I would like to interview you regarding your tourism business in the

national park with specific focus on ecotourism and/or tourism activities in national park. I would like to meet you once or twice between February and August 2012 for interviews to learn from your experiences. The interviews will take place at a mutually convenient time and location. The interviews will take place at a mutually convenient time and location. Each interview will take 45-60 minutes. I will sound recorded the interview for transcribed accurately later. The preliminary findings will be shared with you in summary report. The final findings will be written into a dissertation, published in articles, presented at conferences and may be used in future teaching activities.

Participants' rights

You are under no obligation to accept this invitation. If you agree to participate in this research, what you say is confidential and you also have the right to:

- decline to answer any particular question that might make you feel uncomfortable;
- withdraw from the study at any time during participation;
- ask any question about the study at any time during participation;
- ask for the audio recorder to be turned off at anytime;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to summary of the project findings when it is concluded.

Data management

All information will be analysed by the researcher. The welfare of participants will always be of paramount importance when taking records and every effort will be taken to ensure confidentiality and anonymity is maintained. If you not allow using your name, I will use pseudonyms instead your name in the reports of this study. Photo will only be used with your permission. Thus, all information you provide is considered completely confidential. The researcher is responsible for keeping all data. The data will be secured and kept confidential during the research period. All data will be securely kept in locked filing cabinets in my offices at Massey University, Palmerston North, in New Zealand and Chiang Mai for five years (only the researcher can access). The researcher will be responsible for data security and eventual disposal after this study is finished in five years time. The researcher's supervisors and the researcher will take the responsibility to confirm the disposal of all data

Project contacts

The participant is welcome to contact the researcher and/or supervisors if she/he has any question regarding the project. In addition, the participant also can contact the research co-ordinator in Thailand to ask any question about this research. All contact details are shown as follows;

The researcher: Aurathai Phongchiewboon

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Dr.Trisia Farrelly
School of People, Environment & Planning
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E-mail: T.Farrelly@massey.ac.nz

The research co-ordinator (in Thailand)

Dr. Wantanee Chawapong

Chiang Mai Public Health Office
10 Suthep Rd., Tambon Suthep,
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Email: humanethicsouthb@massey.ac.nz.

Thank you for the opportunity to inform you about my research. If you are interested to participate in this research please contact to the researcher directly.

Kind regards, Aurathai Phongchiewboon (Researcher)

3.4 Community Participants

Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities

INFORMATION SHEET

(COMMUNITY PARTICIPANTS)

Researcher Introduction

My name is Aurathai Phongchiewboon. I am currently studying for Doctoral degree in Environmental Management. This research project is being conducted in partial fulfilment of the requirements for the degree of Doctoral of Philosophy in Environmental Management at Massey University, Palmerston North, New Zealand. My research project is entitled: *Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities*. This research is conducted under the supervision of Associate Professor John Holland and Dr. Trisia Farrelly.

Project Description

This study will be conducted in national parks in northern part of Thailand, Doi Suthep-Pui, Doi Inthanon, and Ob Luang National Parks during February to August 2012. This thesis aims to assess the socio-ecological relationships in northern Thailand's national parks in respect to potential livelihood strategies. The researcher will investigate these relationships regarding communities' perception of sustainable livelihood and ways of dealing or coping with environmental and social changes. The results of this study will contribute to a better-informed decision-making and make a useful contribution to the literature and enhance co-management of conservation among national park stakeholders. The ultimate goal of this study is to provide the recommendation of potential livelihood strategies which are able to enhance socio-economic wellbeing while ensuring the ecological integrity of national parks ecosystems.

The Research Participants

This study will be carried out during February to August 2012 in Doi Suthep-Pui, Doi Inthanon and Ob Luang National Parks. I would like to meet with representatives from government sectors, non-government organizations (NGOs), tourism business sectors and with people who live in the national parks in these communities. These communities are listed as following;

- Doi Inthanon National Park: Baan Mae Klang Luang and Baan Pa Hmoon,
- Doi Suthep-Pui National Park: Baan Mae Sa Mai and Baan Hmong Doi Pui
- Ob Luang National Park: Baan Huay Ka Noon and Baan Pa Kluay

Selection Criteria of Potential Participants

The criteria for potential community participants are 1.) The participants with household located in one of the three national parks, 2) the participants with experiences in participation in the national park's activities and/or royal projects in the national parks, 3.) The participants who have been living in this household for at least 5 years and are over the age of 20 years old, and 4.) The participants who have experience of ecotourism and/or tourism activities or have agricultural experience within the three national parks. If you are met with three of these criteria's, I would like to invite you to participate in this research. The researcher will select participants to include mixed ages and genders to obtain a wide range of the communities' livelihood perceptions.

The research procedures

The researcher will seek an opportunity to attend the community meeting to introduce herself and research project using information sheet. The researcher will clarify any questions in doubt and ask for permission to attend the further meetings for data collection process as participatory observation. The researcher will inform the head of the community to alert the community prior to data collection. The researcher will also observe the communities' livelihoods, their living place and social activities as a community member.

Clarification and sufficient time will be provided to potential participants with information sheet and consent form. The consent to participate will be directly collected by the researcher. All potential participants will receive a consent form through the opportunity to make own decisions with sufficient time regarding their participation in this study. The individual consent form must be returned to the researcher directly. In addition, the attendance at community meetings regard to observation and data collection. The researcher's role during the meeting will be purely observational. Participatory observation is the one of the data collection process. The main data collection process is face to face in-depth interviews between the researcher and participants.

Invitation to participate

As you are a member of community within one of these three national parks, I would like to invite you to participate in this study. Participation in this study is voluntary. With your permission, I would like to interview with you about your background information of your experience of living in national park and your livelihood, which may concern with national park activities. This would mean meeting with me once or twice between February and August 2012 for interviews so I can learn about your perceptions of your livelihood strategies and environmental conservation.

The interviews will take place at a mutually convenient time and location. Each interview will take 45-60 minutes. I will sound recorded the interview for transcribed accurately later. In addition, the agreement for image recording is optional for participation and will be included in the consent form. If you allow taking your photo of your setting or some activities, please sign in the consent form and the researcher will be able to take the photos as your permission. The preliminary findings will be shared with you in briefly report and the final finding will be written into a dissertation, publish in articles, shared at conference and also teaching activities in future.

Participants' rights

You are under no obligation to accept this invitation. If you agree to participate in this research, what you say is confidential and you also have the right to:

- decline to answer any particular question that might make you feel uncomfortable;
- withdraw from the study at any time without any negative consequences by advising the researcher;
- ask any question about the study at any time during participation;
- ask for the audio recorder to be turned off at anytime;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to summary of the project findings on request to the researcher.

Data management

All information will be analysed by the researcher. The welfare of participants will always be of paramount importance when taking records and every effort will be taken to ensure confidentiality and anonymity is maintained. If you not allow using your name, I will use pseudonyms instead your name in the reports of this study. Photo will only be used with your permission. Thus, all information you provide is considered completely confidential. The researcher is responsible for keeping all data. The data will be secured and kept confidential during the research period. All data will be securely kept in locked filing cabinets in my offices at Massey University, Palmerston North, in New Zealand and Chiang Mai for five years (only the researcher can access). The researcher will be responsible for data security and eventual disposal after this study is finished in five years time. The researcher's supervisors and the researcher will take the responsibility to confirm the disposal of all data.

Project contacts

The participant is welcome to contact the researcher and/or supervisors if she/he has any question regarding the project. In addition, the participant also can contact the research co-ordinator in Thailand to ask any question about this research. All contact details are shown as follows;

The researcher: Aurathai Phongchiewboon

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Dr. Trisia Farrelly
School of People, Environment & Planning
Massey University
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The research co-ordinator (in Thailand)

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Email: humanethicsouthb@massey.ac.nz.

Thank you for the opportunity to inform you about my research. If you are interested to participate in this research please contact to the researcher directly.

Kind regards, Aurathai Phongchiewboon (Researcher)

3.5 Academic Participants

Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities

INFORMATION SHEET

(ACADEMIC PARTICIPANTS)

Researcher Introduction

My name is Aurathai Phongchiewboon. I am currently studying for Doctoral degree in Environmental Management. This research project is being conducted in partial fulfilment of the requirements for the degree of Doctoral of Philosophy in Environmental Management at Massey University, Palmerston North, New Zealand. My research project is entitled: *Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities*. This research has conducted under the supervision of Associate Professor John Holland and Dr. Trisia Farrelly.

Project Description

This study will be conducted in national parks, namely, Doi Suthep-Pui, Doi Inthanon, and Ob Luang National Parks in February to August 2012. This thesis aims to assess the socio-ecological relationships in northern Thailand's national parks with respect to potential livelihood strategies. The researcher will investigate these relationships regarding communities' perception of sustainable livelihood and ways of dealing with environmental and social changes. The results of this study will contribute to better-informed decision-making and make a useful contribution to the literature and enhance co-management of conservation among national park stakeholders. The ultimate goal of this study is to provide the recommendation of potential livelihood strategies which are able to enhance socio-economic wellbeing while ensuring the ecological integrity of national parks ecosystems.

The Research Participants

This study will be carried out in February 2012 to August 2012 in Doi Suthep-Pui, Doi Inthanon and Ob Luang National Parks. I would like to meet with representatives from government sectors, non-government organizations (NGOs), academic, and tourism business sectors including people who live in the national parks in these communities. These communities are listed as following;

- Doi Inthanon National Park: Baan Mae Klang Luang and Baan Pa Hmoon
- Doi Suthep-Pui National Park: Baan Mae Sa Mai and Baan Hmong Doi Pui
- Ob Luang National Park: Baan Huay Ka Noon and Baan Pa Kluay

Invitation to participate

As you are one of academic person who studied and experienced to conduct study projects relate to this research topic or have been working with the six selected communities. I would like to invite you to participate in this study. Participation in this study is voluntary. With your permission, I would like to interview you regarding your academic expertise in the national park with specific focus on people livelihoods in national park. I would like to meet you once or twice between February and August 2012 for interviews to learn from your experiences. The interviews will take place at a mutually convenient time and location. The interviews will take place at a mutually convenient time and location. Each interview will take 45-60 minutes. I will sound recorded the interview for transcribed accurately later. The preliminary findings will be shared with you in summary report. The final findings will be written into a dissertation, published in articles, presented at conferences and may be used in future teaching activities.

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You are under no obligation to accept this invitation. If you agree to participate in this research, what you say is confidential and you also have the right to:

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- withdraw from the study at any time during participation;
- ask any question about the study at any time during participation;
- ask for the audio recorder to be turned off at anytime;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to summary of the project findings when it is concluded.

Data management

All of informations will be analysed by the researcher. The welfare of participants will always be of paramount importance when taking records and every effort will be taken to ensure confidentiality and anonymity is maintained. If you not allow using your name, I will use pseudonyms instead your name in the reports of this study. Photo will only be used with your permission. Thus, all information you provide is considered completely confidential. The researcher is responsible for keeping all data. The data will be secured and kept confidential during the research period. All data will be securely kept in locked filing cabinets in my offices at Massey University, Palmerston North, in New Zealand and Chiang Mai for five years (only the researcher can access). The researcher will be responsible for data security and eventual disposal after this study is finished in five years time. The researcher's supervisors and the researcher will take the responsibility to confirm the disposal of all data.

Project contacts

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Tel: +64 6 3569099 ext.5565
E-mail: J.D.Holland@massey.ac.nz

Dr.Trisia Farrelly
School of People, Environment & Planning
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Email: humanethicsouthb@massey.ac.nz.

Thank you for the opportunity to inform you about my research. If you are interested to participate in this research please contact to the researcher directly.

Kind regards, Aurathai Phongchiewboon (Researcher)

Appendix 4: Consent Form

MASSEY UNIVERSITY
COLLEGE OF SCIENCES
TE WĀHANGA PŪTAIAO

Socio-Ecological Relationships and Livelihood Strategies in Northern Thailand's National Park Communities

PARTICIPANT CONSENT FORM – INDIVIDUAL

I have read the information sheet and have had the details of the study explained to me.

My questions have been answered to my satisfaction, and I understand that I may ask further questions at any time.

I agree / do not agree to the interview being sound recorded.

Participants' rights

You are under no obligation to accept this invitation. If you agree to participate in this research, what you say is confidential and you also have the right to:

- decline to answer any particular question that might make you feel uncomfortable;
- withdraw from the study at any time without any negative consequences by advising the researcher;
- ask any question about the study at any time during participation;
- ask for the audio recorder to be turned off at anytime;
- provide information on the understanding that your name will not be used unless you give permission to the researcher;
- be given access to summary of the project findings on request to the researcher.

I agree to participate in this study under the conditions set out in the Information Sheet.

Signature: ..... **Date:** .....

Full Name - printed .....

Te Kunenga ki Pūrehuroa

Institute of Natural Resources
Ecology Group
Private Bag 11222, Palmerston North 4442, New Zealand T +64 6 356 9099 F +64 6 350 5623 E ecology@massey.ac.nz
www.massey.ac.nz

Appendix 5: Timetable of Field Research in the Six Villages

Park	Year	2012																											
	Month	February				March				April				May				June				July				August			
	Week	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4	1	2	3	4
OLNP	BHKN																												
	BPAL																												
DINP	BMKL																												
	BPHM																												
DSNP	BMSM																												
	BHDP																												

Note: DINP = Doi Inthanon National Parks
DSNP= Doi Suthep-Pui National Parks
OLNP= Ob Luang National Parks
BHKN = Baan Huay Ka Noon Village
BPKV = Baan Pa Kluay Village
BMKL = Baan Mae Klang Luang Village
BPHM= Baan Pa Hmoon Village
BMSM = Baan Mae Sa Mai Village
BHDP = Baan Hmong Doi Pui Village

Appendix 6: Interview Themes and Questions

6.1 Government Sector Representatives

Background Information, Roles and responsibilities

1. Could you please provide me a brief introduction of yourself? What is your role in this department?

2. What are your responsibilities included? And what are your recently project that you handle with?

Perspectives on environmental management and hill tribe people livelihood in northern Thailand's national parks

3. In your opinion, what are the effective strategies for managing the natural resources in National Parkss? Who should be involved with these strategies? May you suggest in what strategies? How to achieve that?

4. In your opinion, what is the community-based natural resource management? How it mean to you? What should be included in this management? How people use this?

5. In your opinion, what are the sustainable ways of natural-based tourism and/or ecotourism management? How these terms mean to you? Have you ever been to natural-based tourism and/or ecotourism destination? What activities did you join and how?

6. In your opinion, what is the sustainable livelihood? How it mean to you? What are the potential livelihood strategies for achieving the sustainable livelihood and how?

Community recognition

6. Do you know … (communities' name)… in … (National Parks's name)…? If yes, how did you know this community? In addition, have you ever been to this community?

7. Did you know … (Park official of the community' name)… within … (community' name)? If yes, how did you know him/ her community?

Communication and management

8. Have you ever work with … (Park official of the community' name)… within … (community' name)?

9. What kind of work did you work with … (Park official of the community' name)… within … (community' name)? A. How it relate to community-based natural resource management? And/or; B. How it relate to natural-based tourism management and ecotourism activities? And/or; C. How it relate to rural development and sustainable livelihood?

10. How can … (Park official of the community' name)… and/or community members from… (Community' name) join your meeting if it relate to… (A/B/C)..., and how you organize this meeting?

A. their community-based natural resource management practices

B. their natural-based tourism management and ecotourism activities

C. their livelihood activities (i.e. opportunities and constraints)

How you organize this meeting? In addition, what did you do during the meeting? (See D, E, F and G)

D. only inform them in what they have to do about … (above A/B/C)… as a result from you and your staff in previous meeting

E. listen their ideas relate to … (above A/B/C)… and then have a discussion together with Park official of community and members

F. shares your ideas and informs the result of your previous meeting about … (above A/B/C)… and then discuss with them.

G. makes a presentation and then discusses together on … (above A/B/C)…

Decision-Making Process

11. Who makes the final decision in your meeting? Do you have any voting system? If yes, who can participate in this decision-making process?

12. What are the issues do you and your staffs make decisions around? Please provide some details if it relate to the … (Community' name)… in terms of livelihood and development in National Parks

13. In your opinion, how can you work with … (Community' name)… in long term and what should be develop in this community? Who can be involved in this development?

Environmental Problems

16. What are environmental problems in … (National Parks's name)…?

17. What are the obstacles in natural resources management inside … (National Parks's name)…?

18. In your opinion, what are the strategies to deal with these problems? How?

Livelihood Issues

19. In your opinion, what are the livelihood problems in … (Community' name)… in (National Parks's name)…?

20. What are the obstacles in the livelihood development in … (Community' name)… in… (National Parks's name)…? In your opinion, what are the strategies to deal with these problems? How?

Thank you for your time and cooperation

Researcher: Aurathai Phongchiewboon

Environmental Management, Massey University, New Zealand

6.2 Non-government Organisation Representatives

Background Information, Roles and responsibilities

1. Could you please provide me a brief introduction of yourself? What is your role in this organisation?

2. What are your responsibilities included? And what are your recently project that you handle with?

Perspectives on the involving natural resource management and people livelihood in the National Parkss

3. In your opinion, what are the strategies for managing the natural resources in National Parkss? Who should be involved with these strategies? How to achieve that?

4. In your opinion, what is the community-based natural resource management? How it mean to you? What should be included in this management? How people use this?

5. In your opinion, what are the sustainable ways of natural-based tourism and/or ecotourism management? How these terms mean to you? Have you ever been to natural-based tourism and/or ecotourism destination? What activities did you join and how?

6. In your opinion, what is the sustainable livelihood? How it mean to you? What are the potential livelihood strategies for achieving the sustainable livelihood and how?

Community recognition and participation

7. Have you ever work with … (Park official of the community' name)… within … (community' name)? What is the recently project that you conduct with … (community' name)? Is it relate to … (see A/B/C)… and how? A. community-based natural resource management; B. natural-based tourism management and ecotourism activities; C. rural development and sustainable livelihood

8. How can … (Park official of the community's name)… and/or community members from… (Community's name)… join your meeting if it relate to… (A/B/C)..., and how you organize this meeting? A. their community-based natural resource management practices; B.

their natural-based tourism management and ecotourism activities; C. their livelihood activities (i.e. opportunities and constraints)

9. In your opinion, what are the ways to improve the people's liveilhoods of … (Community's name)…within … (National Parks's name)…?

10. What is the recently projects of your organisation work with … (Community's name)… relates to … (see A/B/C above)…? When and How? Please provide a brief explanation of the projects.

Information of Organisation and Project Resources

11. Could you please provide me a brief introduction of organisation? When did this organisation set up? How it start? And who can be recruited in this organisation?

12. Where is the funding of organisation come from? How many staffs in your organisation? What are their duties?

Organisation Project

13. Do your organisation relate to the tourism development (i.e. natural-based tourism and/or ecotourism)? What are the names of projects? How do the projects work? in… (A/B/C)..., When? In addition, by whom? Alternatively, the other organisation, which you work together? Where does the funding come from?

14. Do your organisation relate to the livelihood development (i.e. rural development, poverty reduction, food security)? What are the names of projects? How do the projects work? In … (A/B/C)..., When? And whom? Or the other organisation, which you work together? Where does the funding come from?

15. Do your organisation relate to environment conservation and initiatives (i.e. wildlife conservation, reforestation, waste management)? What are the names of projects? How do the projects work? In … (A/B/C)..., When? And whom? Or the other organisation, which you work together? Where does the funding come from?

A. Doi Inthanon National Parks: Baan Mae Klang Luang Village and Baan Pa Hmoon Village;

B. Doi Suthep-Pui National Parks: Baan Mae Sa Mai Village and Baan Hmong Doi Pui Village;

C. Ob Luang National Parks: Baan Huay Ka Noon Village and Baan Pa Kluay Village.

Environmental Problems

16. What are environmental problems in … (National Parks's name)…?

17. What are the obstacles in natural resources management inside … (National Parks's name)…?

18. In your opinion, what are the strategies to deal with these problems? How?

Livelihood Issues

19. In your opinion, what are the livelihood problems in … (Community' name)… in (National Parks's name)…?

20. What are the obstacles in the livelihood development in … (Community' name)… in… (National Parks's name)…?

21. In your opinion, what are the strategies to deal with these problems? How?

Thank you for your time and cooperation

Researcher: Aurathai Phongchiewboon

Environmental Management, Massey University, New Zealand

6.3 Tourism Business Representatives

Background Information, Roles and responsibilities

1. Could you please provide me a brief introduction of yourself? Owner or tourist guide go A. if tourist go to B.

A. What is your role in tourism business? (Then go no.2)

B. What is your tour program today? How long of this program? (Then go no.3.)

2. What are your responsibilities included? In addition, what is your tourism program/package that you advertise/ sell? Or handle with? How does it take for each program/package? In addition, how many people can join in each program/package?

3. How did you know this tour program/package? Why you interest in this tour program/package? if you have a chance to join this tour program/package, would you like to buy this tour again or not? And why?

Knowledge of environment

4. What is the meaning of environment? How do you define your environment? What does your environment include?

5. In your opinion, why the environment is important? What are the activities that you do for your environment?

Knowledge of ecotourism and community-based tourism

6. In your opinion, what does the term "natural-based tourism and/or ecotourism" mean to you? And what does sustainable tourism development" mean to you?

7. What was your last experience on ecotourism? How was it? How did you stay? And how long did you stay? What activities did you do?

8. In your opinion, what is the difference between ecotourism and mass tourism?

9. In your opinion, what does the term "community-based tourism" mean to you? And what does "sustainable community-based tourism" mean to you?

10. What was your last experience on community-based tourism? How was it? How did you stay with that community? And how long did you stay? What activities did you do?

Knowledge of cultural tourism including Indigenous livelihood tourism

11. In your opinion, what does the term "community-based tourism" mean to you? And what does "sustainable community-based tourism" mean to you?

12. What was your last experience on cultural tourism including Indigenous livelihood tourism? How was it? How did you stay with that community? And how long did you stay? What activities did you do?

Knowledge of sustainable livelihood and rural development

13. In your opinion, what does the term "sustainable livelihood" mean to you? What factors can make it achievable for people who living National Parks?

14. In your opinion, what does "rural development" mean to you? What activities should be having?

Environmental Issues

15. What are the problems of environment caused by misunderstanding of ecotourism development?

16. What should the government officer be organize and aware of the impact of tourism on the environment?

17. Why are the good management of Ecotourism and Sustainable Tourism Development important? To culture, business, ecology and education

18. Based on your tour programs / packages, how they can support the sustainable ecotourism in ... (Doi Suthep Pui / Doi Inthanon / Ob Luang) ...National Parks? In your opinion, what are the strategies to manage the sustainable tourism development in ... (Doi Suthep Pui / Doi Inthanon / Ob Luang) ...National Parks?

Livelihood Issues

19. In your opinion, what are the livelihood issue in … (Community' name)… in (National Parks's name)…? What are the other issues? How and where it was occurred? What are the obstacles in the livelihood development in … (Community' name)… in… (National Parks's name)…? And In your opinion, what are the strategies to deal with these problems? How?

20. Based on your tour programs / packages, how they can support the sustainable livelihood in ... (Doi Suthep Pui / Doi Inthanon / Ob Luang) ...National Parks?

21. In your opinion, what are the strategies to manage the sustainable livelihood development in ... (Doi Suthep Pui / Doi Inthanon / Ob Luang) ...National Parks?

Thank you for your time and cooperation
Researcher: Aurathai Phongchiewboon
Environmental Management, Massey University, New Zealand

6.4 Academic Participants

Background Information, Roles and responsibilities

1. Could you please provide me a brief introduction of yourself?

2. What are your areas of expertise? What are your responsibilities included?

3. What are your recently projects that you handle with? Where is the funding of the projects come from? And whom are you working with?

Community Recognition and Participation

4. Have you ever work with … (Park official of the community' name)… within … (community' name)? What is the recently project that you conduct with … (community' name)? Is it relate to … (see A/B/C)… and how?

A. community-based natural resource management;
B. natural-based tourism management and ecotourism activities;
C. rural development and sustainable livelihood

5. How can … (Park official of the community's name)… and/or community members from… (Community's name)… join your meeting if it relate to… (A/B/C)..., and how you organize this meeting?

A. their community-based natural resource management practices
B. their natural-based tourism management and ecotourism activities
C. their livelihood activities (i.e. opportunities and constraints)

6. In your opinion, what are the ways to improve the people's liveilhoods of … (Community's name)…within … (National Parks's name)…?

7. What is the recently projects, which you handle with … (Community's name)… relates to … (see A/B/C above)…? When and How? Please provide a brief explanation of the projects.

Perspectives on natural resource management and people livelihood in northern Thailand national parks

8. In your opinion, what are the strategies for managing the natural resources in National Parkss? Who should be involved with these strategies? How to achieve that?

9. In your opinion, what is the community-based natural resource management? How it mean to you? What should be included in this management? How people use this?

10. In your opinion, what are the sustainable ways of natural-based tourism and/or ecotourism management? How these terms mean to you? Have you ever been to natural-based tourism and/or ecotourism destination? What activities did you join and how?

11. In your opinion, what is the sustainable livelihood? How it mean to you? What are the potential livelihood strategies for achieving the sustainable livelihood and how?

(After this section the researcher will ask research participants base on their expertise)
List Questions for the Academic Expertise in Environmental Education (5 questions)

12. What projects do you have for environmental education in communities within northern Thailand National Parks? Please provide a brief explanation of the projects.

Perspectives on Environmental Education

13. In your opinion, how to provide the environmental education to communities, government authorities, tourism business sectors, and other National Parks stakeholders?

14. In your opinion, how to educate the conservation techniques to communities, government authorities, tourism business sectors, and other National Parks stakeholders?

15. In your opinion, how the environmental education and related initiatives can enhance the community-based tourism and ecotourism in communities within northern Thailand National Parks. And what are the roles of government authorities, tourism business sectors, and other National Parks stakeholders in terms of community-based tourism and ecotourism?

16. In your opinion, how the environmental education and related initiatives can enhance the co-management between communities, government authorities, tourism business sectors, and other National Parks stakeholders?

List Questions for the Academic Expertise in Sustainable Tourism Development (10 questions)

--Knowledge of ecotourism and community-based tourism

17. In your opinion, what does the term "natural-based tourism and/or ecotourism" mean to you? And what does sustainable tourism development" mean to you?

18. What was your last experience on ecotourism? How was it? How did you stay? And how long did you stay? What activities did you do?

19. In your opinion, what is the difference between ecotourism and mass tourism?

20. In your opinion, what does the term "community-based tourism" mean to you? And what does "sustainable community-based tourism" mean to you?

21. What was your last experience on community-based tourism? How was it? How did you stay with that community? And how long did you stay? What activities did you do?

-- Knowledge of cultural tourism including Indigenous livelihood tourism

22. In your opinion, what does the term "community-based tourism" mean to you? And what does "sustainable community-based tourism" mean to you?

23. What was your last experience on cultural tourism including Indigenous livelihood tourism? How was it? How did you stay with that community? And how long did you stay? What activities did you do?

-- Perspectives on Sustainable Tourism Development

24. In your opinion, how to develop the suitable strategy planning on ecotourism and sustainable tourism development in Doi Suthep – Pui and Doi Inthanon National Parks in future development?

25. In your opinion, what are the suitable ways/methods which can be applied for the effectiveness ecotourism in Doi Suthep – Pui National Parks and Doi Inthanon National Parks?

26. In your opinion, If you were the Park official of National Parks, what you will do for ecotourism and sustainable tourism development in northern Thailand National Parks in future development? How?

List Questions for the Academic Expertise in Livelihood Research (10 questions)

--Knowledge of cultural tourism including Indigenous livelihood tourism

27. In your opinion, what does the term "community-based tourism" mean to you? And what does "sustainable community-based tourism" mean to you?

28. What was your last experience on cultural tourism including Indigenous livelihood tourism? How was it? How did you stay with that community? And how long did you stay? What activities did you do?

--Knowledge of sustainable livelihood and rural development

29. In your opinion, what does the term "sustainable livelihood" mean to you? What factors can make it achievable for people who living National Parks?

30. In your opinion, what does "rural development" mean to you? What activities should be having?

Environmental Problems

31. What are environmental problems in … (National Parks's name)…?

32. What are the obstacles in natural resources management inside … (National Parks's name)…?

33. In your opinion, what are the strategies to deal with these problems? How?

Livelihood Issues

34. In your opinion, what are the livelihood problems in … (Community' name)… in (National Parks's name)…?

35. What are the obstacles in the livelihood development in … (Community' name)… in… (National Parks's name)…?

36. In your opinion, what are the strategies to deal with these problems? How?

Thank you for your time and cooperation
Researcher: Aurathai Phongchiewboon
Environmental Management, Massey University, New Zealand

6.5 Community Participants

1. Household information

General information: background of participant (interviewee) and their household structures.

- Interviewee information: name, gender, age, religion and/or beliefs, and ethnic group
- Characteristics of household: type of household, size of household, building material, household facilities and household's locations.

2. Human capital

General information: household members' educational background, skills, health status, citizenship status, roles and responsibilities of each household member

- What is the educational level of each household member?
- What are available the school and educational organisations nearby your household? How can you entry them? If not how can you do?
- What are the educational supports and opportunities to study for each household member?
- What is the traditional environmental knowledge? How do you know about it?
- Where is the healthcare and services? How to access them? How to pay the health check fee?
- What are living skills or other ability of each household member has and need for their future?

3. Natural capital

General information: the accessible way of using the natural resources

- What are the natural resources can be access in National Parks areas? How to access or use?
- What are the terms of access to the natural resources (ownership, rental, share arrangements, open-access, leasing)? How?
- What are main crops in household? How they grow them?

4. Financial capital

General information: the sources of income

- What are main and alternative sources of incomes of each household member? (i.e. average monthly incomes and expenditure)
- What are the organisations that support household income? How can they get involve? (Government funding, NGOs support, Royal Project Foundation, bank credit etc.)

5. Physical capital

General information: the provided facilities and the accessible of infrastructure (household facilities, water supplier, communication and transportation)

- What are household facilities? What infrastructure do household member have access to and use (such as transport, tourism-related services, marketing facilities, health infrastructure, and water supply)? How to access? What instruments or tools do they use for their daily livelihood activities? What are conditions of access to them (ownership, hire, sharing, etc.)?

6. Social capital

General information: The social networking of each community

- What networks or inter-relationship between households and other households or other communities? (Such as kinship, social group, organisations' membership, politic-related contacts, and etc.)
- What are the influence factors on those links, which are become more important? How did they work or relate to (ethnic similarity, mutual assistance, pooling labour, policy or regulation, or their own willingness)?

7. Perspectives on a variety of development and livelihood impacts within northern Thailand's national parks (Interviewee Opinions)

- In your opinion, how the development of *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* impact on the way of accessing these livelihood capitals, or does it change their quality or productivity? How? If natural resources are used, how they used them sustainably?

- In your opinion, how the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* support the community-based natural resources management? Please provide a brief explanation
- In your opinion, how the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* support the sustainable livelihood development? Please provide a brief explanation
- In your opinion, how the *education/ Forestry and The management of national parks* support the sustainable livelihood development? Please provide a brief explanation

8. Vulnerability context

General information: the perceived vulnerabilities that impacts on household's or community's livelihoods capitals (e.g. human, natural, social, financial and physical capital), which relate to the access subsistence, which are impacting on communities' livelihood (trends, shocks, seasonality, context and conditions)

- In your opinion, what are the vulnerable contexts that affect your household or community's livelihoods?
- How the seasonal change impact on your household or community's livelihoods? What are the activities relate to seasonal changes?
- What crises or disaster did your household's or community's livelihoods face and dealt with in the past and the present? How did they solve those problems (health-illness, natural disaster, crop failure, political crisis, financial crisis, civil unrest, legal problems, indebtedness, etc.)? Please provide a brief explanation
- What are the long term changing has taken place in their household's natural, economic and social, environment and how has it dealt with these changes?

9. Policies, institutions and processes

General information: The background information of the related policies/ organisations and their process that impose on household's or community's livelihoods

- What organisations/ institutes and association do household members participate in and what role do they play with them?
- What are benefits of those organisations for their livelihood and how to access these benefits and in what forms (money, food supply, politic-related activities, and etc.?
- How do they reach those organisations, institutes and association? And who are making this decision and who can participate in each household?

- Who make decisions about the use of natural and physical resources in the households and communities? And how are those decisions activated to apply in their communities?
- What regulation of national parksand state affect the Indigenous hill tribe communities that are located in and adjacent to the parks? And how they dealt with these regulations? Who can make this decision?

10. Perspectives on linkage contexts that impact on their livelihoods within northern Thailand national parks (Interviewee Opinions)

- How significantly do the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* change the ability to cope with contexts of vulnerability (i.e. trends, seasonal changes, disasters and politics)?
- What strategies help people cope with temporary changes, or adapt to permanent (long-term) changes?
- How does the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* impact on any of the external forces (i.e. regulations, local organisations, institutions, market policies, and social norms)?

11. Livelihood strategies

General information: The strategic ways or plan to cope with the limited access to natural resources and other National Parks issues.

- How can you and family members manage your and your family members' livelihood? What do you earn income for living?
- How the National Parks regulations impact on you and your family members' livelihood? (e.g. the limitation of access to natural resources and subsistence) and what strategies you and your family members' use for living with this regulation?
- In your opinion, what livelihood activities are concerned with seasonal changes (e.g. agricultural practices and migration)? How do you and your household members deal with the seasonal changes? How the seasonal changes impact on you and your family members' livelihoods?
- In your opinion, how the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* impact on you and your family members' livelihood activities? How these factors they develop livelihood activities (i.e. skills, capitals and markets)?
- In your opinion, what are the sustainable livelihood strategies that you and your family members employ in everyday? How? What are the results?
- In your opinion, how can the potential livelihood strategies to meet communities' well-being be identified?

12. Livelihood outcome

General information: The general information of the socio-economic outcomes and co-management in environmental conservation.

- What are the sources of your household income? How can you sustain yourself and household's income?
- What are the livelihood activities for you and your family members' welfare and health care?
- What are the activities that you and your family members the ecological integrity of the communities and national parksbe sustained?
- In your opinion, how can you assess who achieves a sustainable livelihood and who doesn't?
- What are the current strategic plans to improve natural resources conservation and sustain well-being livelihood in your community?

13. Perspectives on livelihood outcome within northern Thailand national parks (Interviewee Opinions)

- In your opinion, how significantly do the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* contribute directly to improved livelihood outcomes (e.g. household incomes, food storages, agricultural products, livelihood securities, empowerments, and sustainability factors)?
- In your opinion, how significantly do the tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors match with the livelihood strategies, which were selected as the priorities and preferences of household members/ the community (e.g. minimising risk, coping with drought, diversifying, protecting livelihood capital, adapting and maintaining self-resilience)?

14. Perspectives on external influence on livelihoods and Sustainability factors within Northern Thailand national parks (Interviewee Opinions)

- In your opinion, how do the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* impact on any of the external forces (i.e. regulations, local organisations, institutions, market policies, and social norms)?
- In your opinion, how significantly do the *tourism enterprise/ecotourism activities/agricultural practices/ other development projects/ other factors* affect the sustainability of natural-based livelihoods and non- natural-based livelihoods? How do household members and the community deal with these situations?

Thank you for your time and cooperation
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Appendix 7: Data Organisation in NVivo

7.1 Livelihood Resources Theme

Parent node	Child node	Sub-Child node
Natural Capital	o The accessibility of using the natural resources	● National Parks regulations control the access to natural resources ● Community and decision-making processes of the participation in natural resource management ● Community-Based Natural Resources Management (CBNRM) and activities ● Community regulation and environmental management
	o A wide range of livelihood activities in relation to use of natural resources and Livelihood adaptation	● Agriculture (rice paddy fields, fruit trees and other economic plants) ● Planting in home garden (general vegetable and herbal tree) ● Household trading and small enterprise ● Handicraft (weaving their own clothes and selling and other hill tribe products) ● Working with the royal project foundation (plant nursery and economic vegetable plantation in greenhouse) ● Household Livestock (pig, chicken, cow, buffalo and fish) ● Ecotourism/ community-based (eco)tourism ● Conservation initiative (ex. Conservation village broad for conserving the forest areas and watershed areas , and also managing the litter areas) ● Participating in reforestation activities and events as volunteering ● Establish fire break and fire observation
Human Capital	o Educational background	● Basic educations : primary school level (grade 1 to 6) are provided in the village school (free tuition fee with sponsorship from Thai government) ● Higher education: are provided in Chiang Mai city - secondary school, vocational school, and universities. ● Non-formal education ● Open university ● Self-skills (ex. agricultural techniques, traditional cultural function, livestock, language, handicraft,

	o Skills o Training programmes o Local knowledge o health status and health care services o Citizenship status o Roles and responsibilities	craving, fishing, sport and cooking) and how to use these skill ● Self-potential development (in agricultural techniques and other career development) supported by royal project foundation, National Parks office and Forest Restoration Research Unit (FORRU), Chiang Mai University ● The use of medicinal plant and herbs for domestic use and sell to the visitors ● Traditional cultures/ Customs ● Local (Indigenous)foods ● Agriculture techniques ● Herbal treatment and massage ● Ethnic group language (Hmong/Karen) ● Healthcare service is located in downtown within Chiang Mai city (Have one or two village volunteers who have health care certificate from health promotion office in Chiang Mai ● Keep on regularly exercises (during working in the field), have enough sleep time (7-8 hours per day) and not have sweeten food/snacks ● Almost have Thai citizenship and some not have Thai citizenship ● Two ethnic hill tribe are chosen for this study: Hmong and Karen ● Household level: Park official of household, housewife, elder, and household members (individual and household responsibility) ● Village management system: Park official of village, village committee and villagers ●
Social capital	o The social networking of each community o Adaptation and social resilience	● Family members' relationships ● kinship ● Marriage system ● social group and organisations' membership, ● politic-related contacts ● local governance networking's ● Building and increasing the capacity for learning and adaptation with change and National Parks regulations

	o Creating opportunities for self-organisation	● Responsibility of Park official person in each village ● Aspects of self-organisation ● The degree of village unity and compliance of regulations ● Traditional custom and culture (Hmong/Karen) ● Family relationships ● Marriage culture / kinship ● Custom cloth/ Ethnic group dress ● Important events and related belief ● Community management and policy ● National Parks policy and other institution relationships
Physical capital	o facilities and the accessible of infrastructure	● household facilities, ● water supplier, ● communication tools ● transportation
Financial capital	o the sources of income o The sufficiency Economics	● Main source of income: ● Agricultural/ livestock products and trading (related to the price setting, demand of market and the middleman) ● Secondary source of income from ▪ Handicraft product ▪ Household enterprise ▪ Tourism development (community based (eco)tourism and tourist accommodations) ▪ General labours (within village or in Chiang Mai city) ● Money saving system: ▪ Micro-finance/loan ▪ Village saving bank and cooperative ▪ Household saving ● Planting their own edible plant (vegetable) and household's husbandry (mainly are pig, chicken, cow, buffalo and fish)
Political capital	o Governing institutions and power relations o The connections and financial supports from government sectors, NGOs and academics o The development of	● Participation in the policy-making ● Local Empowerment ● Fund providing for the activities of reforestation and firebreak establishment from government, NGOs and academics ● The attempts to participating in collaborative policy-making processes and natural resource management practices

	Co-management initiatives	
Cultural capital	o Traditions, belief and cultures o Traditional ecological knowledge	● Cultural context of Karen and the Hmong ● Code of conduct ● Cultural and ritual performance

7.2 Livelihood Strategies Theme

Parent node	Child node	Sub-Child node
Multiple livelihood strategies	o Agriculture	● Rice paddy field ● Coffee plantation ● Tea Plantation ● Vegetable ● Fruit tree
	o Conservation initiatives	● Reforestation projects ● Establish fire break and observation hall ● Water storage management
	o Handicraft	● Weaving cloths and bags ● Making other hill tribe products
	o Shop owner and/or o Shop assistant	● Clothes and hill tribe products ● Farming, domestic help and Shop assistant
	o General labours	
Livelihood diversification	o Ecotourism and community-based ecotourism	● Local guide ● Tourism service ● Exploring livelihoods in daily life ● Local food. ● Eco-lodge and/or other accommodation (short stay) ● Home stay (long stay)
Migration	o Types	● Permanent ● Seasonal /temporary
	o Reason	● Lack of opportunities about earn a living ● Education ● Job opportunities ● reduction of expenditure ● Peer influence ● Depletion of land (lack of land ownership)
Remittances	o Frequency o To who	● once a week/ once a month /once a year ● Household members
	o Items remitted	● Money and clothes

7.3 Sustainable Livelihood Outcomes Theme

Parent node	Child node	Sub-Child node
Well organized Livelihood strategies	o Better livelihood quality	● The provided household and community facilities
	o Increased numbers of working days	● Household income increasing
	o Household income increasing	● Have better job to earn more money
	o Poverty reduced	● Household have enough food and money for a living and family members
		● Household have enough resources for basic needs
Sustainability issues	o Well-being and capabilities improved	● Household and community member are able to manage the vulnerability and enhance social resilience
	o Livelihood adaptation	● Household and community member are able to participate in natural resources management , conservation initiatives and tools
	o Natural resource-based sustainability ensured	

Appendix 8: IUCN Categories of Protected Areas

Protected Area Categories	Definition
Category I a Strict Nature Reserve Areas	Restricted areas are to maintain various ecosystems and biodiversity, which are significant for scientific research and natural resources with the main purpose to preserve the original condition of the natural habitat.
Category I b Wilderness Areas	Wilderness areas are uninhabited natural areas (e.g. forest and mountains), which maintain a variety of ecological diversity for scientific research and preserve their natural conditions with no change to their habitats.
Category II national parks	Protected areas are managed through ecosystem conservation initiatives and recreational activities with these following objectives; 1. Protect biodiversity and natural resources for future generations. 2. Maintain a good condition of natural landscapes 3. Provide an opportunity for local organisations and other National Parks networks to participate in conservation activities. These opportunities also include scientific research, educational, and recreational and tourism activities, which have to consider environmentally and culturally conserving in National Parks areas.
Category III Natural Monument	Protected areas are managed to preserve national features (natural/cultural features), which have a unique value and are culturally significant.
Category IV Habitat/Species Management Area	Protected areas are managed for conservation through management intervention in order to maintain the habitats and/or preserve specific species.
Category V Protected Landscape/Seascape	Protected areas are managed to sustain natural landscape/seascape conservation and recreation whilst preserving biological diversity and ecological value.
Category VI Managed Resource Protected Area	Protected areas are managed to sustain the use of the natural ecosystem in order to manage unmodified natural systems for long-term protection and to maintain biological diversity, providing sustainable natural products and services that the community need.

Source: Dudley (2008)

Appendix 9: IUCN Protected Area Management Objectives

Management objectives	Protected Area Categories						
	I a Strict Nature Reserve Areas	**I b Wildernes s Areas**	**II National Parkss**	**III National Monumen t**	**IV Habitats/ Species Managem ent Areas**	**V Protected Landscape / Seascape**	**VI Managed Resource Protected Area**
1. Scientific research	1	3	2	2	2	2	3
2. Wilderness protection	2	1	2	3	3	-	2
3. Preservation of species and genetic diversity	1	2	1	1	1	2	1
4. Maintenance of environmental services	2	1	1	-	1	2	1
5. Protection of specific natural and cultural features	-	-	2	1	3	1	3
6. Tourism and recreation	-	2	1	1	3	1	3
7. Environmental education	-	-	2	2	2	2	3
8. Sustainable use of natural resources	-	3	3	-	2	2	1
9. Maintenance of cultural and traditional attributes	-	-	-	-	1	1	2

Source**:** IUCN-WCMC (1994, p. 8)

Note: 1=primary objective, 2=secondary objective, 3=potentially applicable objective

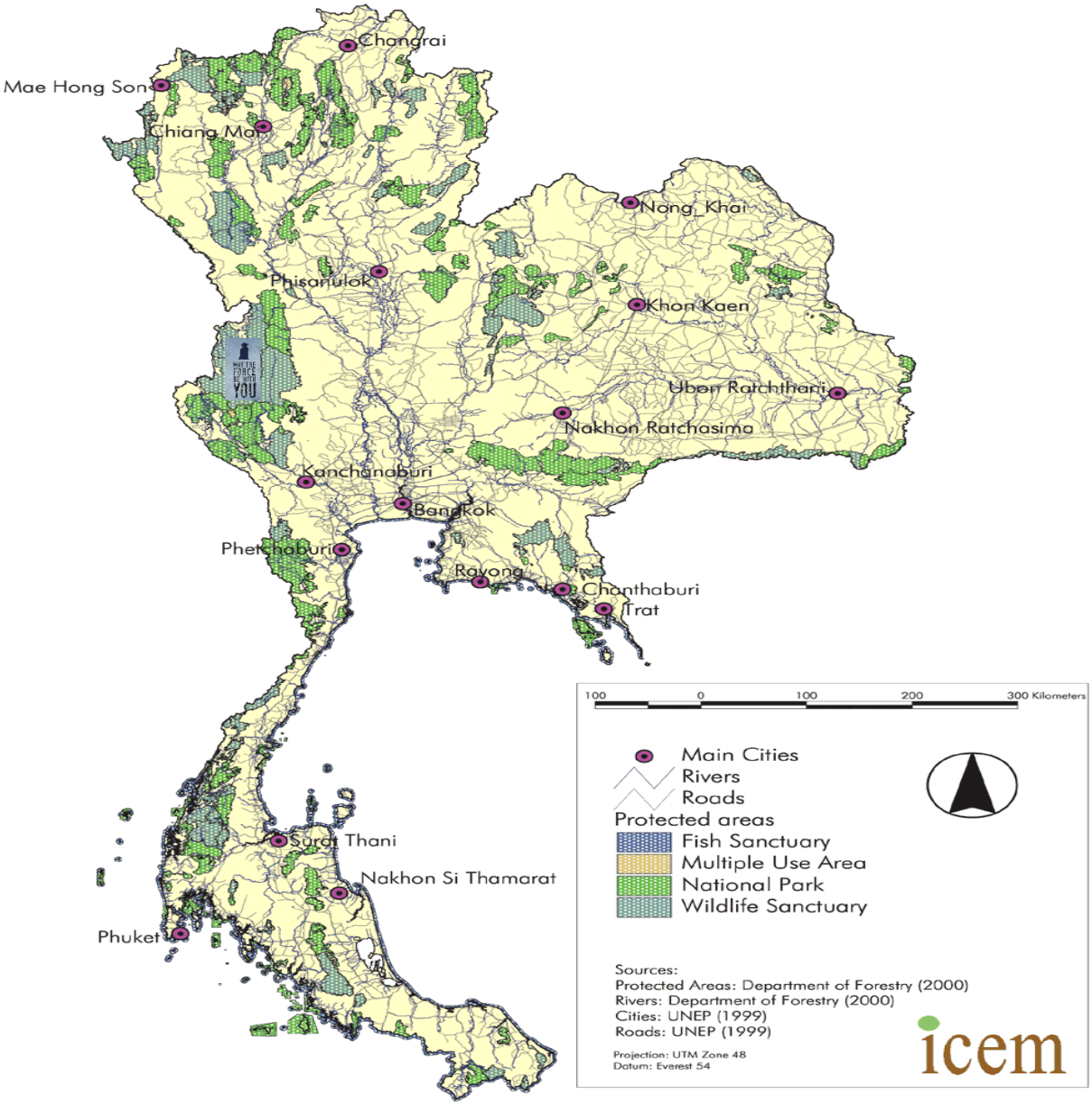
Appendix 10: A Comprehensive Description of National Parks

CATEGORY II **National Park**: protected area managed mainly for ecosystem protection and recreation
Definition Natural area of land and/or sea, designated to (a) protect the ecological integrity of one or more ecosystems for present and future generations, (b) exclude exploitation or occupation inimical to the purposes of designation of the area and (c) provide a foundation for spiritual, scientific, educational, recreational and visitor opportunities, all of which must be environmentally and culturally compatible.
Objectives of Management • to protect natural and scenic areas of national and international significance for spiritual, scientific, educational, recreational or tourist purposes; • to perpetuate, in as natural a state as possible, representative examples of physiographic regions, biotic communities, genetic resources, and species, to provide ecological stability and diversity; • to manage visitor use for inspirational, educational, cultural and recreational purposes at a level which will maintain the area in a natural or near natural state; • to eliminate and thereafter prevent exploitation or occupation inimical to the purposes of designation; • to maintain respect for the ecological, geomorphologic, sacred or aesthetic attributes which warranted designation; and • to take account the needs of indigenous people, including subsistence resource use, in so far as these will not adversely affect the other objectives of management.
Guidance for Selection • The area should contain a representative sample of major natural regions, features or scenery, where plant and animal species, habitats and geomorphological sites are of special spiritual, scientific, educational, and recreational and tourist significance. • The area should be large enough to contain one or more entire ecosystems not materially altered by current human occupation or exploitation.
Organizational Responsibility Ownership and management should normally be by the highest competent authority of the nation having jurisdiction over it. However, they may also be vested in another level of government, council of indigenous people, foundation, or other legally established body which has dedicated the area to long-term conservation.

Source: IUCN-WCMC[25] (1994, p. 19)

[25] International Union for Conservation of Nature and World Conservation Monitoring Centre

Appendix 11: The Locations of Thailand's National Parks and Protected Areas



Source: ICEM (2003 p.28)